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THE GENERA

OF

SOUTH AFRICAN PLANTS.



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*W. Brown & Coats,*  
*1846*

THE GENERA

OF

SOUTH AFRICAN PLANTS.

ARRANGED ACCORDING TO

THE NATURAL SYSTEM.

BY

WILLIAM HENRY HARVEY, M.D., F.R.S. & L.S., M.R.I.A.,  
AND PROFESSOR OF BOTANY IN THE UNIVERSITY OF DUBLIN, ETC.

**Second Edition.**

EDITED BY

J. D. HOOKER, M.D., F.R.S., D.C.L. OXON., LL.D. CANTAB., ETC. ETC.,  
DIRECTOR OF THE ROYAL GARDENS, KEW.

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## PREFACE BY THE EDITOR.

It was the wish of my late friend, the author of the 'Genera of South African Plants,'\* that I should after his decease edit the materials he had prepared for a Second Edition of that work. These materials embraced descriptions of the genera of the principal families of flowering plants, except the *Gramineæ*, which were left in a very incomplete state, and the *Restiaceæ*, which were untouched; and there were also left a few other small families to be worked up, together with the tables of the Natural Orders, and keys, etc. The *Gramineæ* have been kindly completed by an intimate friend of Dr. HARVEY and myself,—GENERAL MUNRO, C.B.; and the *Restiaceæ* by my friend Dr. MASTERS. I have also thought it right to add the genera of Ferns (for the descriptions of which I am indebted to Mr. J. G. BAKER) and of the allied small Orders.

It was not Dr. HARVEY's intention to have (as in the First Edition) included the other Orders of Cryptogams; of these little was known in 1838, whereas now, in 1868, owing greatly to his own exertions, especially amongst the Mosses and *Algæ*, the number of known South African genera possibly rivals

\* Published in 1838, at Cape Town, where the author (then in his twenty-eighth year) held the appointment of Colonial Treasurer.

1 May '25

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that of the Phænogams, and to introduce descriptions of them would therefore swell this volume to inconvenient proportions.

The Introduction to Botany has been taken from that attached to Drs. HARVEY and SONDER's 'Flora Capensis,' with a few very slight additions or modifications.

The Keys to the Natural Orders I have constructed to the best of my ability, and so arranged them as to harmonize as much as possible with the sequence of the Orders adopted by Dr. HARVEY in the body of the work. Such being the case, I would add that it does not throughout express my own views of the affinities of the Orders as expressed by the Jussieuan system; it does so, however, to a very great extent, and this for two reasons: firstly, because Dr. HARVEY professedly followed the 'Genera Plantarum' of Mr. Bentham and myself, so far as that work had proceeded, and for the remaining Orders (after *Rubiaceæ*) he, in the main, followed a manuscript with which I supplied him, giving a rough sketch of Mr. BENTHAM's and my own ideas as to the sequence, etc., of the most important alliances or cohorts of Dicotyledons, and of the Orders they contain.

I have thought it proper to reprint with this edition so much of Dr. HARVEY's Introduction to the First Edition as explains his motives for undertaking the work, and other matters connected with the history of the Cape Botany that may prove interesting. I must refer the reader to his Prefaces to the three volumes of the 'Flora Capensis' for such further information upon the latter subject as brings our knowledge down to the period of his decease (1866).

The number of South African flowering plants supposed to be contained in European Herbaria was, in 1838, estimated by Dr. HARVEY at 7860, comprised in 937 genera; this was before the exploration of the Natal district. The number is estimated in the present edition at 8777 species, contained in 1209 genera.



It only remains to add my regrets that so long a term has elapsed between the death of the gifted and amiable author and the appearance of his work ; this is chiefly due to the fact that it was upwards of a year before the MSS. were placed in my hands, and to the heavy pressure of my own official duties, which has unavoidably retarded its progress through the press.

*Royal Gardens, Kew,*  
*May 27th, 1868.*



## INTRODUCTION.

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[The following passages from the First Edition of the 'Genera of Cape Plants,' are equally applicable to this.—J. D. H.]

I HAVE been requested by many admirers of flowers to recommend some introductory work on Botany; and it would at first seem that I might have taken a much easier method of satisfying their demands than by writing a book for the purpose. So many excellent introductions to Botany have been published, that I could not have done better than to place them in a row before inquirers, to choose from. And this I should have done, had an Introduction to Botany been all that was wanting. But I soon found, on cross-questioning, that something very different was required. One lady told me that she knew already what "calyx, corolla, stamens, and pistils, and all that" meant; and another had penetrated the mystery of Monandria, Diandria, etc., and did not want to be told that over again; what they desired was, a book in which they could discover the names of every plant that struck their fancy in rambling through the fields—in short, a FLORA CAPENSIS.

Here I found myself completely at fault, for there seemed little use in recommending the Flora of THUNBERG, or the more ancient writings of BURMANN, for even could they be procured—which would not be without much difficulty—they would have proved perfectly useless to my lady friends, who, not being blue-stockings, could have derived little instruction from the crabbed Latin in which they are written.

Being desirous, however, to afford every assistance in my power to these would-be votaries of my favourite study, the

idea of writing a FLORA CAPENSIS occurred to me; but it required only a moment's consideration to perceive that such a work, to be useful, must not be a compilation from published sources, but must proceed from a very laborious examination of species, consume a long series of years in preparation, and require a much more extensive acquaintance with South African vegetation than I possess, or have at present the means of acquiring. And what were my poor disciples (*in posse*) to do while I was thus slowly acquiring the means of meeting their wishes? There seemed little chance of my being able to do anything to facilitate their approach to the science for many years, until the idea of the present work occurred to me,—a work which, though very far from supplying the place of a Flora, would at least make some approaches towards one, and would show that, if I could not do *all* I wished to assist their labours, I was perfectly willing to do all that was in my power.

And it struck me also, that by publishing *now*, thus showing that I was in earnest in my wish to undertake a FLORA CAPENSIS, it might be the means of introducing me to many persons interested in Botany, and living in remote districts of the country, who might, perhaps, be willing to unite with me in amassing materials from which a future Flora should proceed. That there are many such I am willing to believe; for it is hardly possible that a well-educated person can have continually under his eye so many and such beautiful flowers as are scattered all over the country, without occasionally feeling an admiration of their structure, and a desire to learn something of their affinities and properties. A little sympathy and encouragement are often all that are wanting to make Botanists of these. Intercourse by letter, and interchanges of specimens, foster the incipient taste, till it “take root downward and bear fruit upward.”

Botany is essentially a science of observation, and the more observers in a country to be investigated, and the more widely they are dispersed, the greater will be the chance of compiling a perfect *Flora*. Every plant has its peculiar district—its “range,” as it is technically called; some species are more



widely distributed than others, some are extremely local, and some absolutely confined to a single spot. The importance, therefore, of *indiscriminate* collections of *every* plant of *every* neighbourhood, must be obvious. By this means we shall *secure* all the local plants, and be able to define the *limits* of the range of the more diffused,—a most interesting and important part of Botany. And in few countries do the ranges of species present more curious results than in South Africa. The intervention of a plain, a river, a range of hills, often produces a remarkable change of species; and a comparison of the plants of any two districts a hundred miles asunder, shows even among common plants, a Flora almost entirely distinct in species. It is well known that the *Ericæ* are, with the exception of a few stragglers, confined to the South-Western districts; the arborescent *Aloes* and succulent *Euphorbiæ* to the Eastern; the *Stapelieæ* chiefly to the Northern; the *Acanthaceæ*, *Rubiaceæ*, *Bignoniaceæ*, and several other small but remarkable orders to the Eastern; that *Restiaceæ*, which cover the Western districts, are gradually supplanted by Grasses as we approach the Eastward; that *Leucadendron argenteum* is confined to Table Mountain, and the *Proteaceæ* generally are much more numerous in the Western than the Eastern districts. It would be very easy to extend these *general* remarks on the geographical range of our families and genera, but I rather defer a question of this sort until an extended basis of observations made in all parts of the country shall have been laid, from which a correct sketch of the geography of South African plants may be drawn. And I may take this opportunity of adding, that I am most anxious to obtain information on this very important subject.

But I fear that many who might, from their position, materially assist the progress of Botanical Science by making observations on, and collections of, the plants of their neighbourhoods, lie under the erroneous supposition that because they have little or no knowledge of Systematic Botany, they are incapable of making collections or observations that can be useful to a botanist. These should recollect that the greatest botanists are at best only students; there was a time

when Linnæus and Jussieu were as ignorant as themselves, and would have continued so had they waited for intuitive knowledge. Sharp eyes and willing hands are the grand requisites for a botanical collector; and if these be once set in motion, knowledge of affinities and structure will gradually follow as operations extend. Many of the most successful collectors of plants, by whose labours in all countries the science has been so extended and enriched, have been persons ignorant of, or but slightly acquainted with, Botany at the time of their *mission*.

There is one simple way in which all such persons may render important services, and by which they may gradually acquire the experience which they would fain possess at starting; namely, by collecting and drying specimens of the plants of their neighbourhood *indiscriminately*, without favour or affection, from the tall forest tree to the moss or the lichen on its trunk. From such collections only, sent from all parts of the country to a common centre, can a FLORA CAPENSIS, in any degree worthy of the subject, be prepared; and should I be favoured with such, and with the confidence of the collectors, it will give me very great pleasure to promote their views in this way, by undertaking the preparation, to the best of my ability, of a Flora of South Africa. Confined as my residence necessarily is to the neighbourhood of Cape Town, I must trust to such help as I may thus receive for all plants found beyond the narrow limits of the Cape District; and it therefore depends very much on persons attached to Botany and scattered over the country, whether I shall ever be able to undertake a Flora at all. I stand before them as a *Candidate*.

W. H. HARVEY.

CAPE TOWN, *July* 1, 1838.

# OUTLINES OF AN INTRODUCTION

TO

## SYSTEMATIC BOTANY.

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### I. DEFINITIONS.

[*Taken, with slight alterations and additions, and by permission of the author, from Mr. Bentham's admirable introduction to his 'Handbook of the British Flora.'*]

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1. A FLORA of any country consists of descriptions of all the *wild* or native plants of that country, so drawn up and arranged that the student may easily identify any plant with the corresponding description.

2. The descriptions should be *clear, concise, accurate, and characteristic*, so that each may be applied to the plant it is intended for, and to no other; they should be arranged as nearly as possible under *natural* divisions, so as to facilitate the comparison of each plant with that most nearly allied to it; and when numerous they should be accompanied by *analytical tables*, in which the prominent characters of the species are synoptically presented to the eye, and so contrasted and divided that the student, by carefully comparing the peculiarities or *characters* of his plant with the characters laid down in the tables, may be guided with the least delay to the description belonging thereto.

3. Descriptions, to be clear and readily intelligible, should be expressed, if possible, in ordinary, well-established language; but, for purposes of accuracy, it is necessary not only to give a more precise, technical meaning to many terms often used vaguely in conversation, but also to introduce purely technical words and phrases, to express parts of plants, or forms or conditions, which are of little use except to the botanist. Our object in these introductory outlines is to define and explain all *technical* or *technically* limited words made use of in the FLORA.

4. Mathematical accuracy, however, must not be expected. The forms assumed by plants and by their parts are all but infinite. Names cannot be invented for all, nor is strict accuracy in application always attainable. The parts to be described are never precisely regular, nor is the same part precisely of the same form in two individuals of the same species: the botanist's definitions partake in this uncertainty, and his aim should be, by a few forcible words, to strike out a character applicable to average individuals of the species to be described.

§ 1. *The Plant in general.*

5. Under the common term **Plant** botanists include every being that has *vegetable life*; from the lofty forest tree to the moss upon its stem, the mouldiness on our decaying provisions, or the green scum that floats on stagnant water.

6. Every portion of a plant which has a distinct office or *function* to perform in the operations of vegetable life is called an **Organ**.

7. The *organs* of plants are of two kinds, the *elementary* and the *compound*.

8. *Elementary* organs are those ultimate parts or *tissues* of which the body of a compound vegetable consists, viz. *cellular tissue*, *woody tissue*, and *vascular tissue*.

9. *Compound* organs are formed by various combinations of the elementary, and appear under the form of **Root, Stem, Leaves, Flowers, Fruit**. Of these the three first, whose function is to assist in the growth of the plant, are termed *Organs of vegetation*; and the two last, whose office is the formation of seed, are the *Organs of reproduction*.

10. All these compound organs, in some shape or other, exist at some period of the life of most, if not all, *flowering plants*, technically called *phænogamous* or *phanerogamous plants*; which all bear *flowers* of more or less complex structure, and are all propagated by *seeds* containing a *germ* or *embryo plantlet*. *Flowerless* or *cryptogamic* plants (Ferns, Mosses, Fungi, Lichens, Seaweeds, etc.) have either very imperfect representatives of flowers, or are absolutely flowerless; and are invariably propagated, not by seeds, but by *spores*, which do not contain any distinct germ or *embryo*.

11. The *elementary* organs will be described afterwards; we shall consider the compound under the following heads: Root, Rootstock, Stem, Leaves, Stipules, Bracts, Inflorescence, Flower, Perianth, Disk, Pistil, Ovule, Receptacle, Fruit, Seed.

§ 2. *The Root.*

12. The primary **Root**, or *descending axis*, grows downwards from the base of the stem, divides and spreads in the earth or water, and absorbs food for the plant through the extremities of its branches.

13. Roots ordinarily produce neither buds nor leaves; their branches, called *fibres* when slender and long, proceed irregularly from any part of their surface; and they increase in length by constant small additions to their extremities.

14. Though roots proceed usually from the base of the stem or rootstock, they may be formed at the base of any bud, especially if the bud lie along the ground, or elsewhere on the stem, if this is placed in circumstances favourable for their development.

15. Roots are

*fibrous*, when they consist chiefly of slender fibres;

*tuberous*, when either the main root or its branches are thickened into short, fleshy, or woody masses called *tubers*;

*tap-roots*, when the main root descends perpendicularly, emitting only very few fibrils, as in the Carrot.

§ 3. *The Rootstock or Rhizome.*

16. The **Stock** of a herbaceous perennial, in its complete state, includes a small portion of the summits of the previous year's roots, as well as of the base of the previous year's stems. Such stocks will increase yearly so as at length to form dense tufts. They will often preserve through the



winter a few leaves, amongst which are placed the buds, which grow out into stems the following year, whilst the underside of the stock emits new roots from or amongst the remains of the old ones. These *perennial stocks* only differ from the permanent base of an undershrub in the shortness of the perennial part of the stems, and in their usually less woody texture.

17. In some perennials the stock consists merely of a branch, which issues in autumn from the base of the stem, either above-ground or under-ground, and produces one or more buds. This branch, or a portion of it, alone survives the winter. In the following year its buds produce the new stem and roots, whilst the rest of the plant has died away. These *annual stocks*, called sometimes *hybernacula*, *offsets*, or *stoles*, keep up the communication between the annual stem and root of one year and those of the following year, thus forming altogether a perennial plant.

18. The stock, whether *annual* or *perennial*, is often entirely under-ground, or root-like. To this some botanists limit the terms *rootstock* or *rhizome*.

19. The term *tuber* is applied to a short, thick, succulent rootstock, as well as to a root (15) of that shape. The *tuber* of an orchis, by some called a *knob*, is an annual tuberous rootstock with one bud at the top. A potato is an annual tuberous rootstock with several buds.

20. A *bulb* is a subglobose or conical rootstock, formed chiefly of the fleshy bases of the preceding year, or of the undeveloped leaves of the future year, or of both; it emits roots from its base, and a stem and foliage from its centre, and frequently forms *bulblets* or *offsets* in the axils of its scales.

21. Bulbs are,

*scaly*, when their scales are thick, narrow, and loosely imbricated, as in the white Lily;

*tunicated*, when the scales are thin, broad, and closely rolled round in concentric layers, as in the Onion.

22. A *corm* is a fleshy, starchy, and solid rootstock, shaped like a bulb, but not scaly, though often coated with the membranous leaf-bases of a previous season; its buds are naked, and small in comparison to the fleshy base from which they spring. The *Ixias*, *Gladioluses*, etc., afford examples of this form of rootstock.

#### § 4. The Stem.

23. The **Stem** grows upwards from the root, bears buds which grow out into leafy branches, and finally produces flowers and fruit.

24. **Stems** are,

*erect*, when they spring perpendicularly from the root or stock;

*decumbent*, or *ascending*, when they spread nearly horizontally at the base, and then gradually turn upwards and become erect;

*procumbent*, when they spread along the ground for the whole or the greater portion of their length;

*prostrate*, when they lie still closer to the ground;

*creeping*, when they emit roots at their joints. This term is also applied to rhizomes or roots, when they spread horizontally.

*tufted* (*caespitose*), when short, and growing in thick, cushion-like tufts.

*diffuse*, when spreading loosely without being strictly decumbent or procumbent.

25. Weak stems are said to *twine* when they support themselves by winding spirally round any object; and to *climb* when they support themselves by their leaves, or by special clasping organs called *tendrils*, which are usually either imperfectly formed leafstalks or flowerstalks. Twining stems are sometimes called *volute*. *Sarmentose* stems or branches are woody, long, and weak.

26. *Suckers* are young plants formed at the end of creeping, underground rootstocks.

27. *Scions*, *runners*, and *stolons*, or *stoles*, are names given to young plants formed at the end, or at the *nodes* (28) of branches or stocks, creeping wholly or partially above-ground, and sometimes to the creeping stocks themselves.

28. A *node* is a definite point on the stem or on a branch, at which one or more leaves are given off, and an *internode* is the portion of a stem comprised between two nodes. The nodes are *pervious* when the pith passes continuously through them, and *closed* or *impervious* when it is interrupted by partitions, as in grasses, etc.

29. *Leafbuds* are small conical bodies, usually covered with scales, and found in the *axils* (33) of leaves of the previous season or of earlier growth; when occurring in other positions, as they sometimes do, they are considered *adventitious* or irregular. They contain the germs of future branches.

30. **Branches** (or leaves) are,

*opposite*, when two proceed from the same node at opposite sides of the stem; *whorled* or *verticillate*, when several proceed from the same node, arranged regularly, like the spokes of a wheel, round the stem.

*geminate*, or in pairs, when two proceed from the same node, at the same side of the stem.

*ternate*, in threes, when three spring from one point.

*fascicled*, when several spring from the same or nearly the same apparent point.

*alternate*, when one only proceeds from each node, one on one side, and the next above or below on the opposite side of the stem.

*decussate*, when opposite, but each pair placed at right angles to the one next above or below it;

*distichous*, when in two ranks; *tristichous*, in three, etc.

*scattered*, when placed irregularly round the stem; but this is often confounded with *alternate*.

*secund*, when all start from or turn towards one side of the stem, like the teeth of a rake.

31. Branches are,

*forked*, when they divide at the end into two or more equal branches;

*dichotomous*, when each 2-pronged fork is again divided, and this mode of division several times repeated;

*trichotomous*, when the forks are 3-pronged, and this repeated;

*umbellate*, when divided at the apex into several branches, and the central one not larger than the rest.

32. The straw-like stems of grasses and some other endogens are often called *culms*.

#### § 5. *The Leaves.*

33. Leaves are expansions which issue laterally from the stem and branches, and usually bear a leafbud (29) in their axil, *i.e.* in the angle formed by the leaf and the branch.

34. An ordinary leaf consists of an expanded, usually flat *blade* or *lamina*, joined to the stem by a footstalk or *petiole*. The extremity of the lamina next the stem is the *base*, the opposite extremity the *apex*, and a line separating the upper and under surfaces, the *margin*.

35. Leaves are,

*sessile*, when the blade rests on the stem without the intervention of a petiole.

Leaves are,

*amplexicaul*, or *stem-clasping*, when the sessile base of the blade is not a mere point, but forms more or less of a ring, clasping the stem horizontally.

*perfoliate*, when the base of the blade not only clasps the stem, but closes round it on the opposite side, so that the stem appears to pierce through the membrane of the leaf itself.

*decurrent*, when the edges of the leaf are continued down the stem, so as to form raised lines, or narrow stem-borders called *wings*.

*sheathing*, when the base of the blade, or of the expanded petiole, forms a vertical sheath round the stem for some distance above the node.

36. Leaves (and flowers) are called *radical*, when they spring directly from a rhizome or stock, or are inserted so close to the base of a stem as to appear to spring from the root or stock. Leaves are *cauline*, when they spring from the main portions of the stem; *rameal*, when from a branch.

37. Radical leaves are *rosulate*, when they spread in a circle on the ground; *cauline* or *rameal* leaves are *fascicled* or tufted, when the leaves of two or more nodes are brought close together in a pencil-like tuft, by the non-development of the internodes; as in *Aspalathus*, *Asparagus*, etc.

38. Leaves are,

*simple* and *entire*, when the blade consists of a single piece, and the margin is nowhere indented; *simple* being used as the opposite to *compound*, and *entire* as the opposite to *dentate*, *lobed*, or divided.

*ciliate*, when bordered with straight hairs, or hair-like teeth; *ciliolate* when the hairs are small.

*dentate*, or *toothed*, when the margin is slightly notched at regular distances into what have been compared to teeth. Such leaves are *serrate* when the teeth are pointed like those of a saw; *crenate*, when blunt and rounded. The diminutives *serrulate*, *crenulate* are used to express minutely serrate or minutely crenate. The hollows between the teeth are respectively called *serratures* and *crenatures*.

*sinuate*, when the margin is bluntly indented, with broad, shallow, and irregular hollows between the projections (like the bays between the headlands of a coast); *wavy*, or *undulate*, when the edges of such a leaf are not flat, but bent up and down (like the waves of the sea). The hollows between the projections are called *sinuses*.

*lobed* or *cleft*, when more deeply indented or divided, but so that the incisions do not reach the midrib or petiole. The teeth or *sections* of such leaves are called *lobes*.

*divided*, when the incisions reach the midrib or petiole, but the parts so divided off, called *segments*, do not separate from the petiole, even when the leaf falls without tearing.

*compound*, when divided to the midrib or petiole, and the parts so divided off, called *leaflets*, separate, at least on the fall of the leaf, from the petiole, as the whole leaf does from the stem, without tearing. The petiole of a compound leaf is sometimes called the *common petiole* (because common to all the leaflets, which often are united to it by *petiolules* or individual petioles); sometimes the *rachis*, a term also applied to the inflorescence (57).

39. Leaves are more or less distinctly marked by *veins*, which, starting from the stalk, diverge or branch as the blade widens, and spread over it in various patterns. These veins represent the woody and vascular system (170) of the leaf. The principal ones, when prominent, are often

called *ribs* or *nerves*; the smaller branches then retaining the names *veins* or *veinlets*. When one principal nerve runs direct from the stalk towards the apex of the leaf, it is called the *midrib*. When several start from the stalk, diverge slightly without branching, and converge again towards the summit, they are said to be *parallel*, although not mathematically so. The venation is said to be *reticulate* or *netted*, when the veins and veinlets are anastomosed together like the meshes of a net; such veins are said to *anastomose* together.

40. The lobes, segments, or leaflets of leaves are,

*pinnate*, when several succeed each other on each side of the midrib or common petiole (compared to the branches of a feather). A pinnately-lobed leaf is called *pinnatifid*. A pinnately-lobed or divided leaf is called *lyrate*, when the terminable lobe or segment is very much larger and broader than the lateral ones; *runcinate*, when the lateral lobes are curved backwards towards the base of the leaf; *pectinate*, when the lobes resemble the teeth of a comb.

*palmate* or *digitate*, when several diverge from the same point; compared to the fingers of a hand. A leaf with palmate lobes is called *palmatifid*.

*ternate*, when three only start from the same point. A leaf with ternate lobes is called *trifid*. A leaf with 3 leaflets, like a trefoil, is *trifoliate*; and when the common petiole is prolonged beyond the insertion of the lateral leaflets, carrying forward the terminal one a short distance, it is *pinnately trifoliate* or *unijugate*.

*pedate*, when the division is at first ternate, but the two outer branches are forked, the outer one of each fork again forked, and so on, and all the branches start from near the base; vaguely compared to the foot of a bird. A leaf with pedate lobes is called *pedatifid*.

41. The teeth, lobes, segments, or leaflets may be again and again toothed, lobed, divided, or compounded. Some leaves are 3-4 or many times divided or compounded. In the latter case they are termed *decompound*.

42. The number of leaves, or of their parts, is expressed adjectively by the following numerals, derived from the Latin:—

|      |     |      |         |          |      |         |       |        |        |        |
|------|-----|------|---------|----------|------|---------|-------|--------|--------|--------|
| uni- | bi- | tri- | quadri- | quinque- | sex- | septem- | octo- | novem- | decem- | multi- |
| 1-   | 2-  | 3-   | 4-      | 5-       | 6-   | 7-      | 8-    | 9-     | 10-    | many-  |

prefixed to a termination, indicating the part referred to.

Thus,

*unidentate*, *bidentate*, *multidentate*, mean 1-toothed, 2-toothed, many-toothed.

*bifid*, *trifid*, *multifid*:—2-lobed, 3-lobed, many-lobed.

*unifoliate*, *bifoliate*:—with one leaflet, with two leaflets, etc.

*unijugate*, *bijugate*, *multijugate*, with one, two, or many pairs of *pinnæ*, or leaflets of a pinnate leaf.

*bipinnate*, *tripinnate*, etc., twice pinnate, thrice pinnate.

*biterminate*, *triterminate*, twice ternate, thrice ternate.

43. Leaves, or their parts or any other flat organs of plants are,

*linear*, when long and narrow, at least 4-5 times as long as broad, with two margins nearly parallel;

*subulate*, or *awl-shaped*, when long and narrow, tapering to a sharp point; *pungent*, when the point is rigid and piercing.

*lanceolate*, when three or more times as long as broad, broadest just below the middle, and tapering towards the summit;

*cuneate*, when broadest above the middle, blunt at the apex, and tapering to the base; compared to an inverted wedge; *flabelliform* or fan-shaped, is broadly cuneate and rounded at top.



Leaves are,

*deltoid*, equilateral-triangular, or shaped like a Greek  $\Delta$ : when applied to the tooth of a *calyx*, the base of the triangle is supposed to rest on the calyx tube.

*spathulate*, when the broad part near the top is short, and the narrow, tapering part long, compared to a *spatula*, or flat ladle.

*oblong* (or broadly linear) when 2-4 times as long as broad, with subparallel sides and blunt extremities;

*ovate*, when about twice as long as broad, broader below the middle, or shaped like the longitudinal section of an egg; *obovate* is the same form reversed, the narrow end being at base.

*orbicular*, or *rotund*, when approaching to a circular form.

*oval*, or *elliptical*, when broadest in the middle, with curved sides, like an ellipse, or oval.

*transversely oblong*, or *oblate*, when conspicuously broader than long.

*rhomboidal*, or *rhomboid*, when shaped like the mathematical figure called a *rhombus*.

*falcate*, shaped like a scythe, curved with nearly parallel sides and a sharp point.

44. Intermediate forms are expressed by combining two terms. Thus, a *linear-lanceolate* leaf is long and narrow, yet rather broader below the middle and tapering to a point; *ovato-lanceolate* is broad towards the base, yet tapering towards the apex, etc.

45. The *apex* or *summit* of a leaf is,

*acute*, or *pointed*, when it is sharp, or forms an acute angle.

*obtuse*, or *blunt*, when it forms an acute angle or oftener is rounded.

*acuminate*, when suddenly narrowed near the top and then prolonged into an *acumen*, or projecting *point*, which may be acute or obtuse, linear or tapering; *cuspidate* is either synonymous with acuminate, or else used to express a more exaggerated degree of acumination, with a more sudden, sharper, and more rigid point.

*truncate*, when the end is cut off nearly square.

*retuse*, when very obtuse or truncate, and slightly indented in the middle;

*emarginate* or *notched*, when more decidedly indented at the end of the midrib.

*mucronate*, when the midrib is produced beyond the apex in the form of a small point; *mucronulate* when it projects very little.

*aristate*, when the point is long and fine, like a bristle.

46. The base of the leaf is liable to the same variations of form as the apex, but the terms commonly used are *tapering* or *narrowed* for acute and acuminate; *rounded* for obtuse; and *cordate* for emarginate. But the term *cordiform*, *cordate*, or *heart-shaped leaf*, is restricted to an ovate and acute leaf, cordate at base, with rounded auricles; and *obcordate* to an obovate, deeply emarginate or subbilobed leaf or leaflet, with rounded lobes. The word *auricle* is more strictly applied to the prolonged base of sessile and stem-clasping leaves.

47. If the *auricles* (46) are pointed, the form is said to be *sagittate* when the points are directed downwards, as in the head of an arrow; *hastate*, when the points diverge horizontally, compared to a halbert.

48. A *reniform* leaf is broader than long, very obtuse at apex, slightly but broadly cordate at base, with rounded auricles, compared to a kidney.

49. In a *peltate* leaf, the stalk, instead of proceeding from the lower edge of the blade, is attached to the under surface, often near the lower edge, but sometimes in the very centre of the blade; the nerves radiate from the point of attachment of the petiole, or proper base of the leaf. It

is structurally a cordate or reniform leaf whose auricles are confluent; just as a perfoliate leaf (35) is the amplexicaul, in a similar condition.

50. In their consistence, leaves or other flat organs are,  
*fleshy*, when thick and soft; *succulent* is generally applied in the same sense, but implies the presence of more juice;  
*coriaceous*, or leathery, when firm and dry, or very tough;  
*membranous*, when thin and not stiff;  
*scarious*, or *scariose*, when very thin, more or less transparent, and not green, yet rather stiff.

51. Solid leaves (or stems, fruits, seeds, or other parts of plants not flattened) are,

*acrose*, or *acicular*, very slender, like needles;  
*setaceous*, bristleform; *capillary*, when very slender, like hairs;  
*ovoid*, when egg-shaped, with the broad end downwards; *obovoid*, if the broad end be upwards.

*globular*, or *spherical*, round like a ball;  
*conical*, cone-shaped, tapering upwards; and *obconical*, tapering downwards, if in both cases a cross-section shows a circle.

*pyramidal*, when tapering upwards, *obpyramidal*, when tapering downwards, if in both cases a cross-section shows a triangle or polygon.

*fusiform*, when broad in the middle and tapering to each end like a spindle, and not angular.

*cylindrical*, when not perceptibly tapering and not angular.

*terete*, cylindrical, with the cross-section circular;

*moniliform*, and *torulose*, when terete and constricted at intervals.

*trigonus*, rather bluntly 3-angled; *triquetrous*, sharply 3-angled.

*flattened*, or *depressed*, when vertically compressed.

*compressed*, when laterally flattened; and *obcompressed* (a bad term) sometimes used in the sense of dorsally compressed.

*meniscoid*, shaped like a watch-glass.

*patelliform*, saucer-shaped.

52. The mode in which unexpanded leaves are disposed in the leafbud is called their *vernation*, or *præfoliation*: it varies considerably, but is rarely noticed in descriptive botany.

#### § 6. *Stipules*.

53. **Stipules** are leaf-like or scale-like appendages at the base of the leafstalk or on the node of the stem. They are often absent, when the leaf is *exstipulate*; when present they are generally two, one at each side of the petiole, and they sometimes appear to protect the young leaf before it is developed. They vary extremely in size and appearance; and are either *free*, *i. e.* separate from the petiole, or *adnate*, *i. e.* laterally attached wholly or in part to the petiole. They often afford excellent characters in distinguishing plants from each other, and ought always to be closely observed.

54. *Stipellæ*, or secondary stipules, are similar organs, sometimes found on compound leaves at the points where the leaflets are inserted.

#### § 7. *Bracts*.

55. A **Bractea** or *bract*, is either the leaf from the axil of which a flower is developed, when this differs in appearance from an ordinary leaf; or else it is any reduced leaf situated on the branches of the *inflorescence* (57) below the calyx.

56. When flower-stalks are branched, and have bracts at their first as well as at their second and subsequent ramifications, the former are called *general*, the latter *partial* bracts, or *bracteoles*. The terms *general* and

partial are also applied to involucre (64) when similarly situated. The word *bracteole* is sometimes given to the uppermost bracts, when much smaller or very different from the lower ones.

### § 8. Inflorescence.

57. The **Inflorescence** of a plant is the arrangement of the flowering branches, and of the flowers upon them. An *inflorescence* is a flowering branch, or the flowering summit of a plant above the last stem-leaves, with its branches, bracts, and flowers.

58. A flower or an inflorescence is *terminal* when at the summit of a stem or leafy branch; *axillary*, when in the axil of a lateral leaf.

59. A *peduncle*, or flowerstalk, is the stalk either of a solitary flower or of an inflorescence; in the latter case it may be either simple or branched. A *pedicel* is the ultimate branchlet of an inflorescence, supporting a single flower.

60. A *scape* is a peduncle that proceeds from the rootstock, or from so near the base of the stem as to appear radical, provided always that it bears no leaves at all, or that the leaves are reduced to mere scales or bracts.

61. The inflorescence is *centrifugal*, when the terminal flower opens first, and those on the lateral branches are successively developed; *centripetal*, when the lowest flowers open first and the main stem continues to lengthen, developing fresh flowers. Both these kinds of inflorescence may be combined on the same plant; the main branches may be centripetal, and the flowers on the lateral branches centrifugal, or *vice versâ*.

62. An **Inflorescence** is,

*a Spike, or spicate*, when the flowers are sessile along a single unbranched axis, called the *rachis*. *Catkin* is the name given to the spicate inflorescence of several trees whose flowers are reduced to scaly bracts or are very imperfect; as in the Oak, Willow, etc. *Spadix* is a fleshy spike round which is rolled a single large bract, or *spathe*, as in the Arum plant (*Richardia Æthiopica*). The inflorescence of a *Palm* is usually a branching spadix.

*a Raceme, or racemose*, when the flowers are borne on pedicels along a single unbranched axis, also often called the *rachis*.

*a Panicle, or paniculate*, when the axis is divided into branches, each bearing two or more flowers.

*a Head, or capitate*, when several sessile or subsessile flowers are collected into a compact, head-like cluster. The short, flat, or conical axis on which the flowers of a *head*, or *capitulum*, are seated, is called the *receptacle*—a term also given to the *torus* or *thalamium* of a single flower.

*an Umbel, or umbellate*, when several branches or pedicels spring from the same (apparent) point, *i. e.* from an *axis* reduced to a point. (It is essentially the same as a *raceme* with the axis suppressed; or as a *head*, with long-stalked flowers.) An *umbel* is said to be *simple*, when each of its branches or *rays* supports a single flower; *compound*, when each ray supports a partial umbel, or *umbellule*.

*a Corymb, or corymbose*, when the branches or pedicels starting from several points on a short, but not suppressed axis, all attain nearly the same level. It is a flat-topped or *fastigiata* panicle or short raceme.

*a Cyme, or cymose* inflorescence, is a centrifugal panicle, and is frequently corymbose. The terminal flower opens first. The

lateral branches, successively developed, are usually forked (*dichotomous* or *trichotomous*). Sometimes after the first forking the branches are no longer divided, but produce a succession of pedicels on the upper side, forming apparently unilateral racemes; but they differ from true racemes by the pedicels springing, not from the axil of the bract, but from a point opposite its insertion or above or below it. This variety, called a *scorpioid cyme*, is found in *Drosera*, the *Boraginæ*, and many other plants; when young the branches are frequently rolled back at the top like the tail of a scorpion, whence the name.

63. Bracts are generally placed singly under each branch of the inflorescence, and under each pedicel; *bracteoles* are usually two, one on each side, on the pedicel, or close under the flower, or on the calyx itself; but bracts are also frequently scattered along the floral branches without axillary pedicels.

64. When several bracts are collected in a whorl, or are so close together as to appear whorled, or are closely imbricated round the base of a head of flowers or an umbel, they are collectively called an **Involute**. The bracts composing an involucre are variously termed, according to their appearance, *leaves*, *leaflets*, *bracts*, or *scales*, when placed close beneath the calyx, they form an *epicalyx*. *Paleæ*, or chaff, of the receptacle are the inner scale-like bracts of Composites, grasses, and some other plants, when of a thin, yet rigid substance, usually narrow, and pale or translucent. *Glumes* are the bracts of sedges and grasses.

### § 9. The Flower.

65. A flower is a terminal bud, enclosing the organs of reproduction by seed. An unopened flower is called a flower-bud, or *alabastrum*; and the period between the opening of a flower and the commencement of withering is called its *anthesis*.

66. The parts of a flower or floral organs are—1st, the *perianth*, consisting either wholly of *calyx*, if in a single whorl; or of *calyx* and *corolla*, if in a double whorl; 2nd, the *stamens*, or fertilizing organs; 3rd, the *pistil*, which contains the *ovules*, or germs of the future seed.

67. A *complete* flower is one in which the calyx, corolla, stamens, and pistil are all present; a *perfect* flower is one in which all these organs, or such of them as are present, are capable of performing their several functions. An *incomplete* flower is one in which some of the floral organs are wanting; and an *imperfect* flower one in which some organs are so altered as to be incapable of performing their proper functions. Imperfect organs are said to be *suppressed*, *abortive*, or *rudimentary*, if very much reduced in size and almost obliterated.

68. A **flower** is,

*dichlamydeous*, when the perianth is in two distinct whorls.

*monochlamydeous*, when the perianth is in one whorl, or when calyx and corolla are so consolidated as to appear in a single piece.

*asepalous*, when there is no calyx.

*apetalous*, when there is no corolla.

*naked*, when there is no perianth.

*hermaphrodite*, or *bisexual*, when both stamens and pistil are present and perfect.

*male*, or *staminate*, when stamens, but no pistil, or only an imperfect one, are present.

*female*, or *pistillate*, when there is a perfect pistil, but no stamens, or only imperfect ones, present.

*neuter*, when both stamens and pistils are imperfect or absent.



A flower is,

*barren*, or *sterile*, when it produces no seed.

*fertile*, when it does produce seed.

69. The flowers of a plant or species are said collectively to be, *unisexual*, or *diclinous*, when the flowers are all either male or female.

*monœcious*, when the male and female flowers are distinct, but on the same plant.

*diœcious*, when the male and female flowers are on distinct plants.

*polygamous*, when male, female, and hermaphrodite flowers are variously mixed on the same plant.

70. A head of flowers, or *capitulum*, is *heterogamous*, when male, female, hermaphrodite, and neuter flowers, or any two of these, are included in it; *homogamous*, when all the flowers are of one kind and structure. A spike or head is *androgynous*, when male and female flowers are mixed in it. (See *Compositæ*, *Aroideæ*, *Cyperaceæ*, etc.)

71. As the scales of buds are leaves undeveloped or reduced in size, shape, and consistence, and bracts are leaves likewise reduced in size and occasionally altered in colour; so the parts of the flower are considered as leaves still further altered in shape, colour, and arrangement round the axis, and often more or less combined with each other.

72. To understand the arrangement of the floral parts let us take a *complete* flower, in which all the parts are *free* from each other; *definite* in number, *i. e.* always the same in the same species; and *symmetrical* or *isomerous*, *i. e.* when each whorl consists of the same number of parts. The flower of *Flax* (*Linum*), of *Crassula*, or of *Oxalis*, answers to this description: the two first consist of 4, the last-named of 5 whorls of altered leaves, placed immediately one within the other.

73. The **Calyx** forms the outer whorl. Its parts are called *sepals*.

74. The **Corolla** forms the next whorl. Its parts, called *petals*, usually *alternate* with the sepals, *i. e.* the centre of each petal is immediately over the interval between two sepals.

75. The **Stamens** form one or two or more whorls within the petals. If two, those of the outer whorl (the *outer stamens*) usually *alternate* with the petals, and are consequently *opposite* to the sepals; those of the inner whorl (the *inner stamens*) *alternate* with the outer ones, and are consequently *opposite* the petals. If there is but one whorl of stamens, they most frequently *alternate* with the petals; sometimes (as in *Rhamnææ* and *Primulacææ*) they are *opposite* the petals and *alternate* with the sepals.

76. The **Pistil** forms the innermost whorl. Its parts, called *carpels*, usually (when *definite* and *isomerous*) *alternate* with the inner row of stamens.

77. In an axillary or lateral flower (58) the *upper* parts of each whorl (sepals, petals, stamens, or pistil), are those that are next the main axis of the stem or branch; the *lower* those that are furthest from it; the intermediate are said to be *lateral*.

78. The number of parts in each whorl of a flower is expressed *adjectively* by the following numerals, derived from the Greek:

mono-, di-, tri-, tetra-, penta-, hexa-, hepta-, octo-, ennea-, deca-, etc., poly-,  
1-, 2-, 3-, 4-, 5-, 6-, 7-, 8-, 9-, 10-, many-,

prefixed to a termination indicating the whorl referred to.

79. Thus, a **Flower** is,

*disepalous*, *trisepalous*, etc., as there are 2, 3, etc., sepals.

*dipetalous*, *tripetalous*, etc., as there are 2, 3, etc., petals.

*diandrous*, *triandrous*, etc., as there are 2, 3, etc., stamens.

*digynous*, *trigynous*, etc., as there are 2, 3, etc., separate carpels.

Thus, a flower is,

*dimerous*, *trimerous*, etc., if symmetrical, according as there are 2, 3, etc., parts in each whorl.

80. Flowers are *unsymmetrical*, or *anisomerous*, strictly speaking, when any one of the whorls has a different number of parts from the others; but when the carpels alone are reduced in number, the flower is still frequently called symmetrical, or isomerous, if the calyx, corolla, and staminal whorls have all the same number of parts.

81. Flowers are *irregular* when the parts of any one of the whorls are unequal in size, dissimilar in shape, or do not spread regularly round the axis at equal distances. In descriptions, it is more especially irregularity of the corolla that is referred to; a slight inequality in other parts does not prevent the flower being classed as regular, if corolla or perianth be regular.

#### § 10. *The Perianth, and Calyx or Corolla.*

82. The **Calyx** or outer whorl of the perianth is usually green, smaller than the corolla, and of coarser texture; sometimes very minute, rudimentary, or obsolete altogether; sometimes imperfectly whorled, or not whorled at all, or composed (as in *Cactus*) of a large number of *sepals*, of which the outer ones pass gradually into bracts, and the inner ones into petals.

83. The **Corolla** or inner whorl of the perianth is usually coloured, larger than the calyx, and of a more delicate texture, and in popular language is often called the *flower*. Its petals, except in *double flowers*, are rarely indefinite in number, and the whorl more rarely broken than in the calyx. Sometimes the petals are very small, rudimentary, reduced to scales (as in *Thymelea*), or absent altogether.

84. In very many cases the so-called *simple Perianth* is one in which the sepals and petals are nearly similar in form and texture, and present apparently a single whorl. The real nature of such a perianth may be detected by examining an unopened flower-bud, when one half of the parts will be found placed outside of the others (as in *Anthericum*, *Ornithogalum*, *Rumex*, etc.), indicating an arrangement in two whorls, or calyx and corolla. Hence different authors may describe the same flower differently, either as having a single or a double perianth.

85. In the following terms the prefixes expressive of the modifications of the corolla and its petals are equally applicable to the calyx and its sepals, or to the perianth and its segments.

86. The **Corolla** is,

*monopetalous* (sometimes called *gamopetalous*), when the petals are united or soldered together, either entirely or at the base only, into a cup, tube, or ring.

*polypetalous* (or *dialipetalous*), when they are all separate or *free* from the very base.

87. When the petals are partially united in a monopetalous corolla, the lower consolidated portion of the corolla is called the *tube*, whatever be its shape, and the free upper portions of the petals are called the *teeth*, *lobes*, or *segments*, according as they are short or long in proportion to the whole length of the corolla. When the calyx or corolla enlarges after flowering it is called *acrescent*; when it falls early, *deciduous* or *caducous*.

88. The flat expanded portion of a petal, corresponding to the blade of the leaf, is called its *limb* or *lamina*; and the stalk, corresponding to the petiole, its *claw*. When there is no claw, the petals are *sessile*.

89. The *astivation* of a corolla is the arrangement of the petals, or their free portions, in an unexpanded bud. It is *valvate*, when the edges of the petals touch, but do not overlap; *imbriate*, when the edges overlap each other, at least near the top; *twisted*, *contorted*, or *convolute*, when each petal

obliquely overlaps the adjoining one on one side, and is overlapped by the adjoining one on the other side. In valvate aestivation, if the edges are much inflexed, the aestivation is said to be *induplicate*; *involute*, if the margins are inrolled; and *reduplicate*, if the margins project outwards into salient angles; *plicate*, when folded together in plaits; *crumpled*, when puckered irregularly, as in the petals of a poppy.

90. In general shape the Corolla is,  
*tubular*, when the whole or the greater part forms a tube or a cylinder.  
*campanulate*, when approaching in some measure the shape of a cup or bell.  
*urceolate*, when the tube is swollen, but contracted at the top, and slightly expanded again into a narrow rim, as in many *Heaths*.  
*rotate* or *stellate*, when the petals or lobes are spread out horizontally from the base, or nearly so, like the rays of a wheel or star.  
*hypocrateriform* or *salver-shaped*, when the lower part is cylindrical, and the upper portion expanded horizontally. In this case the term *tube* is restricted to the cylindrical part, and the horizontal portion is called the *limb*, whether it be divided to the base or not.  
*infundibuliform* or *funnel-shaped*, when the tube is cylindrical below, but gradually enlarged upwards into a subcampanulate limb, of which the lobes either stand erect or spread horizontally.

The upper orifice of the tube of a monopetalous corolla is often called its *mouth* or *throat*.

*Irregular* corollas have received various names; some of the most important are

- bilabiate*, or *two-lipped* corolla, when in a four or five-lobed corolla (or calyx) the two or three upper lobes stand obviously apart, like an upper lip, from the two or three lower lobes, that form an under lip.  
*personate*, when two-lipped, and the orifice of the tube closed by a projection from the base of the upper or lower lip, called a *palate*; as in *Snapdragon*, *Nemesia*, etc.  
*ringent*, when strongly two-lipped and the orifice of the tube very open.  
*spurred*, when the tube, or the lower part of the petal has a conical, hollow projection, compared to the spur of a cock; *saccate*, when the spur is short and round, like a little bag; *gibbous*, when swollen or enlarged at one side.  
*resupinate*, or reversed, when the under lip is turned up, or appears so.

The above terms are mostly applied to monopetalous corollas. Terms applied to certain forms of corolla distinctive of certain Natural Orders will be explained under the respective Orders.

### § 11. *The Stamens.*

91. The *stamens* or fertilizing organs of a flower, though in a theoretical point of view regarded as metamorphosed leaves, are yet, except in a few cases of petal-like stamens, very different in shape and aspect from leaves, sepals, or petals.

92. Usually a stamen consists of a stalk or *filament*, bearing at the summit an *anther*, divided into two pouches or *cells*. These anther-cells are filled with *pollen*, commonly existing as minute grains, forming a yellow dust, which on the expansion of the flower is scattered abroad from an opening in each cell, called a *slit* or *pore*. The part of the anther

which connects the two cells is called the *connective*; it is sometimes a mere line, but often variously expanded, causing the cells to separate more or less.

93. The *filament* is often wanting, and the anther sessile, yet still the stamen is perfect; but if the anther, which is the essential part, be wanting, or does not contain pollen, the stamen is imperfect, and is then said to be *barren*, *abortive*, or *rudimentary* (67), according to the degree to which the imperfection is carried. Imperfect stamens are often called *staminodia*.

94. In unsymmetrical flowers the stamens of each whorl are sometimes reduced in number below that of the petals, even to a single one, and in several Natural Orders or genera they are multiplied indefinitely. The terms *monandrous* and *polyandrous* are restricted to flowers which have really but one stamen, or an indefinite number respectively. When several stamens are united into one piece, the flower is said to be *syndrous*.

95. **Stamens** are,

*monadelphous*, when united by their filaments into one company or cluster. This cluster either forms a ring or tube round the pistil, or, if the pistil be wanting, occupies the centre of the flower.

*diadelphous*, when so united into two clusters. In many *Leguminosæ* 9 stamens are united by their filaments into a tube, slit on the upper side, and a tenth, placed in the slit, is free. In *Fumariaceæ* there are two equal groups, each consisting of 3 (or rather  $\frac{1}{2}$ , 1,  $\frac{1}{2}$ ) stamens.

*triadelphous*, *pentadelphous*, *polyadelphous*, when so united into 3, 5, or several clusters.

*syngenesious*, when united by their anthers in a ring round the pistil, the filaments usually remaining free; as in the *Compositæ*.

*didynamous*, when (as in a bilabiate flower) there are 4 stamens in two pairs, those of one pair longer than those of the other.

*tetradynamous*, when (in *Cruciferae*) there are six, four of them longer than the others.

96. An **Anther** is,

*adnate*, when continuous with the filament, the anther-cells appearing to lie their whole length along the upper part of the filament.

*versatile*, when attached near their middle to the extreme point of the filament, so as to swing loosely.

*innate*, when firmly attached by their base to the apex of the filament. This is a modification of *adnate*.

97. Anther-cells may be *parallel*; or *diverging* at a less or a greater angle; or *divaricate*, when placed end to end, so as to form a nearly straight line. The end of each anther-cell placed nearest to the other cell is generally called its *apex* or *summit*, and the other end its *base*; but by some authors the sense of these terms is reversed.

98. Anthers have often on their connective, or on their cells, appendages termed *bristles* (*setæ*), *spurs*, *crests*, *points*, *glands*, etc.: according to their appearance. (See *Diosmeæ*, *Ericaceæ*, etc.)

99. Anthers have occasionally only one cell; this may take place either by the disappearance of the septum between two very closely-placed cells, which thus become *confluent*; or by the abortion or total deficiency of one cell, when the anther is said to be *dimidiate*, or halved.

100. Anthers at maturity will open or *dehisce*, to let out the pollen, either by *valves*, *pores*, or *slits*. The *dehiscence* is said to be *introrse* when



the slit or opening faces the pistil; *extrorse*, when the opening is towards the circumference of the flower.

101. Very peculiar structures of the anther and pollen will be described under the Orders *Aselepiadeæ* and *Orchideæ*.

### § 12. *The Pistil.*

102. The **Pistil** or female system always occupies the centre of the flower and terminates the growing axis. It consists of one or more *carpels*, containing the germs of one or more seeds. The pistil is usually sessile; if stalked, its stalk is called a *podocarp* (but this must not be confounded with the *gynobasis* or *gynophore*) (127).

103. A complete pistil consists of three parts:—

- 1, the *ovary* or enlarged base, which includes a cavity or *cell* (*loculus*), containing one or more *ovules* (117), which are the earliest condition of the future seeds.
- 2, the *style*, a prolongation of the carpel usually proceeding from the summit, sometimes from the side of the ovary, and supporting
- 3, the *stigma*. This is various in appearance, sometimes a mere point to the style, sometimes a flattish cushion, sometimes a narrow line, sometimes a broad lamina; but it always consists of loosely cellular substance, destitute of epidermis, and covered with minute protuberances, called *papilla*. It is through the *stigmatic tissue* that the fertilizing influence of the pollen is conveyed to the ovules.

104. The *style* is often wanting, and the *stigma* is then sessile, but in the perfect pistil there is always at least one ovule in the ovary, and some portion of stigmatic tissue. Without these the pistil is imperfect, and said to be *barren*, *abortive*, or *rudimentary* according to the degree of imperfection.

105. The ovary being the essential part of a pistil, most of the terms relating to the number, arrangement, etc., of the carpels apply specially to the ovary. In general, the term *ovary* is used to designate all the carpels of a flower, especially if they are at all united.

106. The number of carpels or ovaries in a flower is frequently reduced below that of the parts of the other floral whorls, even in flowers otherwise symmetrical. In a comparatively small number of genera the carpels are more numerous than the petals, or indefinite; in these cases they are either arranged in a single whorl, or form a head or spike in the centre of the flower, as in the Buttercup and *Anemone*.

107. The terms *monogynous*, *digynous*, etc., *polygynous* (1, 2, or many ovaries) are vaguely used, applying sometimes to the whole pistil, sometimes to the carpels alone, and sometimes to the styles or stigmas. When a more precise nomenclature is used, the flower is *monocarpellary*, when the pistil consists of a single, simple carpel; *bi-*, *tri-*, etc., or *polycarpellary*, when the pistil consists of 2, 3, or many carpels, whether separate or united.

108. A pistil is *syncarpous* when the carpels are united into one compound ovary; *apocarpous*, when the carpels are free or separate.

109. A compound ovary is,

*unilocular*, or *one-celled*, when there are no partitions between the ovules, or when the partitions do not meet, so as to divide the cavity into several chambers.

*plurilocular*, or *several-celled*, when completely divided into two or more cells by partitions called *dissepiments* (*septa*). These dissepiments are usually vertical, radiating from the centre or *axis* of the ovary to its circumference.

A compound ovary is,

*bi-, tri-, quadri-, etc.*, or *multilocular*, according to the number of the cells, or *loculi*, 2, 3, 4, or many.

110. In general the number of cells or dissepiments, complete or partial, or of rows of ovules, corresponds with that of the carpels, of which the ovary is composed. But sometimes each carpel is divided completely or partially into two cells, or has two rows of ovules, so that the number of carpels appears double what it really is. Sometimes, again, the carpels are so completely combined as to form a single cell, with a single ovule, although it really consists of several carpels; but in these cases the ovary is generally described as it appears, as well as such as it is theoretically supposed to be.

111. In apocarpous ovaries the styles are usually free, each bearing its own stigma; very rarely (as in *Asclepiadææ*) the larger portion of the styles or the stigmas alone are united, while the carpels remain separate.

112. Syncarpous flowers are said to have,

*several styles*, when the styles are free from the base.

*one style with several branches*, when the styles are connected at the base, but separate below the point where the stigmas or stigmatic surfaces commence.

*one simple style with several stigmas*, when united up to the point where the stigmas or stigmatic surfaces commence, and then separating.

*one simple style, with branched, lobed, toothed, notched, or entire stigma* (as the case may be) when the stigmas also are more or less united or subdivided.

113. In general the number of styles, or of branches of the style or stigmas, is the same as that of the carpels, but sometimes that number is doubled, especially in the stigmas, and sometimes the stigmas are much subdivided or *penicillate*, that is, divided into a tuft of hair-like branches, as in some species of *Drosera*.

114. An entire stigma is said to be *punctiform* when it appears like the mere point of the style; *capitate*, when globular, like the head of a pin.

115. The *placenta* is the part of the inside of the ovary to which ovules are attached, sometimes a mere point or line on the inner surface, often more or less thickened or raised. *Placentation* therefore is the indication of the part of the ovary to which ovules are attached.

116. The placentas are,

*axile*, when the ovules are attached to the axis or centre, that is, in plurilocular ovaries, when they are attached to the inner angle of the cell; in unilocular simple ovaries (which have almost always an excentric style or stigma) when the ovules are attached to that side of the ovary nearest to the style; in unilocular compound ovaries, when the ovules are attached to a central axis, cushion, or column, rising up from the base of the cavity, and either free at the top (free central placenta), or attached also to the summit of the cavity.

*parietal*, when the ovules are attached to the inner surface or walls of the cavity of a one-celled compound ovary. Parietal placentæ are usually slightly thickened or raised lines; sometimes broad surfaces nearly covering the inner surface of the cavity; sometimes projecting far into the cavity and constituting partial dissepiments, and even meeting in the centre, but without cohering there. In the latter case the distinction between the one-celled and several-celled ovary sometimes almost disappears.

§ 13. *The Ovule.*

117. The *ovule* is a minute body borne by the placenta (115) and destined, after fertilization, to become the seed. At first it is merely a cellular excrescence, but as it enlarges it acquires a definite form and structure, and when fully grown consists of a central mass or *nucleus*, enclosed in one or two bag-like coats, the outer called *primine*, the inner *secundine*. The nucleus is the essential part; in it the *embryo* is formed after fertilization. The coats afterwards become the integuments of the seed.

118. The *chalaza* is that point at which the base of the nucleus is confluent with the coats of the ovule, and is generally discoloured in the seed. The *foramen* is the common aperture of the coats, opposite the apex of the enclosed nucleus, and through which the pollen is admitted in fertilization: in the seed it is called the *micropyle*.

119. Ovules are said to be,

*orthotropous* or *straight* (or *atropous*), when the chalaza or organic base coincides with the apparent base of the ovule, and the foramen is situated at the opposite extremity, the ovule having a rectilinear axis: as in the Nettle, Dock, Fig, etc.

*campylotropous* or *incurved*, when, the base remaining the same, the axis is curved down and the foramen directed towards the base; as in the *Caryophyllæ* and many leguminous plants.

*anatropous* or *inverted*, when the chalaza, in an ovule with rectilinear axis, is removed to the point most distant from the hilum, and the foramen brought close to the hilum. It is like an orthotropous ovule reversed on its cord; the cord adhering to one side of the ovule and becoming more or less incorporated with its coats. Such an adhering cord, appearing either like a line or a ridge, is called the *raphe*: it connects the hilum with the chalaza. Anatropous ovules are much the commonest; good examples of distinctly marked raphe and chalaza may be found in the Orange and the Pansy.

*amphitropous* or *half-inverted*, when the raphe extends but half the length of the ovule, and the chalaza and foramen, at opposite ends, are about equidistant from the hilum: as in the Mallow tribe, the Primrose, etc.

§ 14. *The Receptacle and relative attachment of the Floral Whorls.*

120. The **Receptacle**, or *torus*, is the extremity of the peduncle (above the calyx) upon which the corolla, stamens, and ovary are inserted. It is sometimes little more than a mere point, but it is often more or less lengthened, thickened, or otherwise enlarged. [The term *receptacle* is also extended to the summit of a branch or inflorescence, on which the flowers of a head are inserted, as in the *Compositæ*.]

121. A *disk*, or *disc*, is a circular enlargement of the receptacle, usually cup-shaped, flat, or cushion-shaped (*pulvinate*), and often of a waxy or fleshy appearance. It is situated either immediately at the base of the ovary within the stamens, or between the petals and stamens, or bearing the petals or stamens or both at its edge, or quite at the extremity of the receptacle, with the ovaries arranged in a ring round it or under it.

122. The disk may be *entire*, *toothed*, *lobed*, or *divided* into a number of parts, usually as many or twice as many as the stamens or carpels. When the parts of a divided disk are separate and short, they are often called glands.

123. *Nectaries* are either the disk, or small deformed petals, or abortive

stamens, or appendages at the base of the petals, or stamens or any small bodies within the flower which do not look like petals, stamens, or carpels. The term *nectary* is nearly obsolete.

124. When the disk bears the petals and stamens on its rim, it is frequently adherent to and confluent with the tube of the calyx : or it is adherent to the outside of the ovary ; or adherent both to calyx-tube and ovary. Hence arise the three following important distinctions in the relative insertions of the floral whorls :—

Petals and stamens, or, as in common language, flowers, are,

*hypogynous* (*i. e.* under the ovary), when they or the disk that bears them are entirely *free* or separate from both calyx and ovary. The ovary in this case is said to be *free* or *superior* ; the calyx *free* or *inferior* ; the petals as being *inserted on the receptacle*.

*perigynous* (*i. e.* round about the ovary), when the disk bearing the petals is quite free from the ovary, but is more or less combined with the calyx-tube. The ovary is then still described as *free* or *superior*, even though the combined disk and calyx-tube may form a deep cup with the ovary lying in the bottom ; the calyx is said to be *free* or *inferior* ; the petals as being *inserted on the calyx*.

*epigynous* (*i. e.* upon the ovary), when the disk bearing the petals is combined both with the base of the calyx-tube and the outside of the ovary ; either closing over the ovary so as only to leave a passage for the style, or leaving more or less of the top of the ovary free, but always adhering to it above the level of the insertion of the lowest ovule (except in a few cases when the ovules are suspended from the apex of the cell). In *epigynous* flowers the ovary is described as *adherent* or *inferior* ; the calyx as *adherent* or *superior* ; the petals as *inserted on or above the ovary*.

125. When there are no petals, the insertion of the stamens determines the difference between hypogynous, perigynous, and epigynous flowers.

126. When both petals and stamens are present,

in *hypogynous* flowers the petals and stamens are usually separate, but sometimes they are confluent at base. In that case, if the petals are distinct from each other, and the stamens are monadelphous, the petals are often said to be *inserted on*, or *combined with, the staminal tube* ; if the corolla is gamopetalous and the stamens distinct from each other, the latter are said to be *inserted on the tube of the corolla*.

in *perigynous* flowers the stamens are usually inserted immediately within the petals, or alternating with them on the edge of the disk, or even on the unenlarged part of the receptacle.

in *epigynous* flowers, when the petals are distinct, the stamens are usually inserted as in perigynous flowers ; when the corolla is gamopetalous, the stamens are often combined at the base with the tube of the corolla, or, as it is more frequently expressed, *inserted on the tube*.

127. When the receptacle is distinctly elongated below the ovary, it is often called a *gynobase*, *gynophore*, or stalk of the ovary.

128. An *epigynous disk* is a name given either to the thickened summit of the ovary in epigynous flowers, or very rarely to a real disk or enlargement of the receptacle closing over the ovary.

129. In the relative position of any two parts of the flower, whether in the same or in different whorls, they are,

*connivent*, when nearer together at the summit than at the base.

*divergent*, when further apart at the summit than at the base.



Any two parts of the flower are,

*coherent*, when united together, but so slightly that they can be separated with little or no laceration. Each of the two coherent parts may be said to be *adherent* to the other, but the latter term is often used to express a closer union than mere coherence. [Some authors restrict *cohesion* to the connation or confluence of parts of the same whorl; and *adhesion* to the connation or confluence of parts of different whorls.]

*connate*, when so closely united that they cannot be separated without laceration. Each of the two connate parts, and especially that one which is considered the smaller or of the least importance, is said to be *adnate* to the other.

*free*, when neither coherent nor connate.

*distinct* is also used in the same sense, but is likewise applied to parts distinctly visible, or distinctly limited.

### § 15. *The Fruit.*

130. The **Fruit** consists of the ovary and whatever other parts of the flower persist at the time the seed is ripe, usually enlarged and altered in shape and consistence. It encloses or covers the seed or seeds till the period of maturity, when it either opens for the seed to escape, or falls to the ground with the seed.

131. Fruits are often said to be *simple*, when formed in a single flower; *compound* (or more properly *collective*), when they proceed from several flowers closely packed or combined in a head. In descriptive botany a fruit is always supposed to result from a single flower, unless the contrary be stated. In compound fruits (the fruits of several flowers) the involucre or bracts often persist and form part of the fruit, but very seldom so in simple fruits.

132. The *pericarp* is the portion of the fruit formed of the ovary and whatever adheres to it exclusive of and outside of the seed or seeds, exclusive also of the persistent receptacle, or of whatever portion of the calyx persists round the ovary without adhering to it.

133. Fruits may be divided into *succulent* (including *fleshy*, *pulpy*, and *juicy*) and *dry*. They are *dehiscent* when they open at maturity to let out the seeds; *indehiscent*, when they do not open spontaneously, but fall off with the seeds. Succulent fruits are almost always indehiscent.

134. The principal succulent fruits are,

the *berry*, in which the whole substance of the pericarp is fleshy or pulpy, with the exception of the outer skin or rind, called the *epicarp*. The seeds are usually immersed in the pulp.

the *drupe* or *stone-fruit*, in which the pericarp, when ripe, consists of two distinct portions, an outer succulent one called the *sarcocarp* or *mesocarp* (covered by a skin or epicarp) and an inner dry *endocarp*, called the *putamen* or stone. When there are two or more stones, they are called *pyrenes*.

135. The principal dry fruits are,

the *achene*, or *akene*, including all one-seeded, dry and hard, indehiscent, seed-like small fruits, popularly called "naked seeds." Such fruits may arise from free one-seeded carpels (as in the *Buttereup*); or from adherent or inferior carpels (as in the *Compositæ*.)

the *utricle*, similar to the akene, but with a thin and loose membranous pericarp.

the *nut*, a hard, one-celled, one-seeded fruit like an akene, but larger, and usually resulting from a plurilocular ovary, all of whose cells and ovules, save one, become obliterated in the ripe fruit; as in the Hazel-nut, Acorn, etc.

the *samara* or *key-fruit*, a nut or akene, having a broad wing at apex or margin (as in the Ash).

All the above are indehiscent.

The principal dehiscent dry fruits are,

the *follicle*, a pod formed of a single free carpel, dehiscent, along its *ventral* or seed-bearing suture only (as in the *Larkspur*, the *Asclepiadaceæ*, etc).

the *capsule*, a pod or dehiscent fruit of any compound pistil, whether formed from an inferior or a superior ovary. The *pyxis*, or *pyxidium*, is only a capsule which opens by a circular, horizontal, nearly medial line, cutting off the upper half like a lid.

136. Peculiar names given to the fruit or parts of the fruit in *Cruciferae*, *Leguminosæ*, *Rosaceæ*, *Cucurbitaceæ*, *Umbelliferae*, and some other large Orders, will be explained under those Orders.

137. The dehiscence of a capsule is said to be *septicidal*, when the carpels separate at the line of junction; in this case the placenta are either marginal, or attached to the more or less inflexed margins, constituting the dissepiments. The dehiscence is *loculicidal*, when the margins of the carpels remain joined, while the dorsal sutures split open; in this case the placenta or dissepiments will be borne in the middle of the valve. *Septifragal* dehiscence, in which the valves fall away, leaving persistent dissepiments or axile placenta, may occur either in septicidal or loculicidal capsules. Circular, horizontal dehiscence (as in a *pyxis*) is called *circumscissile*. When in a fruit, consisting of one-seeded carpels, the carpels fall away either closed or nearly closing round the seed, each segregated carpel is called a *coccus*.

#### § 16. The Seed.

138. A seed is the fertilized ovule arrived at maturity. It is almost always, except in Conifers, enclosed in the pericarp. It contains, when ripe, an *embryo* or young plant, either filling or nearly filling the cavity, but not attached to the outer shell or skin of the seed; or immersed in, or lying close to, a mealy, horny, oily, or fleshy substance, called the *albumen* or *perisperm*. The presence or absence of this albumen, that is, the distinction between *albuminous* and *exalbuminous* seeds, is one of great importance. The embryo or albumen can often only be found or distinguished when the seed is quite ripe, or sometimes only when it begins to germinate.

139. The shell of the seed consists usually of two separable *coats*. The outer coat, called *testa*, is usually the principal one, and in most cases the only one attended to in descriptions. It may be hard and *crustaceous*, or thin and *membranous*, or thin and *chartaceous* or *papyraceous* (like parchment or paper), or rarely succulent. It is sometimes expanded into *wings*, or bears a tuft of hair, cotton, or wool, called a *coma*. The inner coat is called *tegmen*.

140. The *funicle* (115) or stalk by which a seed is attached to the placenta, is occasionally enlarged into a membranous, pulpy, or fleshy appendage, which sometimes almost closes over the seed; this is called an *aril*. A *strophiole* or *caruncle* is a similar appendage, originating in the testa. Seeds having an aril are said to be *arillate*.

141. The *hilum* (115) is the scar left on the seed when it separates from the funicle. The *micropyle* (118) is the mark indicating the position of the foramen of the ovule.

142. The **Embryo** consists of the *radicle* or root-stem; one or two *cotyledons* or primary leaves (seed-leaves); and the *plumule*, or first leaf-bud of the young plant. In many seeds, especially when there is no albumen, these several parts are very conspicuous; in others they are difficult to dis-

tinguish; and in some cases the embryo cannot be found until the seed begins to germinate.

143. The micropyle (141) always indicates the position of the extremity of the radicle, whose direction, either as respects the fruit or the seed, it is often important to notice. The radicle is said to be

*superior*, if pointing towards the summit of the *fruit*.

*inferior*, if pointing towards the base of the *fruit*.

#### § 17. *Accessory Organs.*

144. Under this name are included various external parts of plants which often do not appear to act any essential part, either in the vegetation or reproduction of the plant. They may be classed under four heads — *Tendrils* and *Hooks*, *Thorns* and *Prickles*, *Hairs*, and *Glands*.

145. *Tendrils* are either abortive petioles, or abortive peduncles, or abortive ends of branches. They are simple or branched, flexible, and coil round any object within their reach, in order to support the plant to which they belong. *Hooks* are similar holdfasts, but of a firmer consistence, not branched, and only hooked at the extremity.

146. *Thorns* and *Prickles*. A *thorn* or *spine* is a sharply-pointed, rigid extremity of a branch, or abortive petiole, or abortive peduncle; it is organically connected with the woody system of a plant. A *prickle* is a sharply-pointed, rigid excrescence from the *epidermis*, or outer skin; it is not connected with the woody system, and may occur on a branch, on the petiole, on the veins of a leaf, on the peduncle, or even on the calyx or corolla. A plant is *spinous* if it has thorns, *aculeate* if it has prickles.

147. *Hairs*, in the general sense, or the *indument* (or clothing) of a plant include all those processes from the epidermis which have been called *bristles*, *hairs*, *down*, *cotton*, or *wool*.

The epidermis or surface is said to be,

*smooth* or *even*, when without any roughness whatever.

*glabrous*, when without hairs of any kind; *glabrescent*, or *glabrate*, when the hairs are deciduous.

*striate*, when marked with parallel lines, either slightly raised or merely coloured.

*furrowed* or *ribbed*, when the parallel lines are more distinctly raised.

The epidermis, or surface, is said to be,

*viscous*, *viscid*, or *glutinous*, when covered with a sticky or clammy exudation.

*tuberculate* or *warted*, when covered with minute, blunt, wart-like prominences.

*muricate*, when covered with short, hard, sharp prominences.

*punctate*, when covered with minute dots.

*foveolate*, when covered with small pits.

*echinate*, when the prominences are longer and sharper, almost prickly.

*setose*, or *bristly*, when bearing stiff, straight hairs.

*glandular-setose*, when the *setæ*, or *bristles*, are tipped with a minute, glandular head or drop.

*glochidiolate*, when the *setæ* are hooked at the point.

*pilose*, when the surface is thinly sprinkled with rather long, simple hairs.

*hispid*, when more thickly covered with rather stiff hairs.

*hirsute*, when the hairs are dense and not so stiff.

*downy* or *pubescent*, when the hairs are short and soft; *puberulent*, when very short or minute; *velvety* or *velutinous*, when very dense, like the pile of velvet.

The epidermis, or surface, is said to be,

*strigose*, when short, stiff hairs lie close-pressed to the surface, and all in one direction; *strigillose*, when such hairs are very short or small.

*tomentose* or *cottony*, when the hairs are soft, short, dense, somewhat interwoven, and usually white or whitish.

*woolly*, when the hairs are loosely intricate and long, like wool.

*mealy* or *farinose*, when the hairs are very minute, intricate, and white, and come off readily, having the appearance of meal or dust.

*canescent*, *canous*, or *hoary*, when the hairs are minute, close-pressed, and white, and not readily to be distinguished separately by the eye, but giving a general whitish hue to the epidermis.

*glaucous* or *glaucouscent*, when of more or less a pale bluish-green, often covered with a bloom like that on a plum or cabbage-leaf.

148. Hairs are often branched. If forked from the base, the forks spreading in opposite directions, the hairs are said to be *attached by the centre*. If several branches radiate horizontally, the hairs are *stellate*, or star-like. Stellate hairs become stellate *scales* when the rays are confluent at base; and the surface is said to be *scaly* or *lepidote*.

149. The term *gland* is given to several different productions, and principally to the four following:—

1. Small, wart-like or shield-shaped bodies, either sessile or sometimes stalked, of cellular or somewhat fleshy consistence, occasionally secreting a small quantity of oily or resinous matter, but more frequently dry. They are generally few in number, often definite in their position and form, and occur chiefly on the petiole or principal veins of leaves, on the branches of inflorescences, or on the stalks or principal veins of bracts, sepals, and petals.
2. Minute raised dots, usually black, red, or dark-coloured, of a resinous or oily nature, always superficial and apparently exudations from the epidermis. They are often very numerous on leaves, bracts, sepals, and green branches, and occur even on petals and stamens, more rarely on pistils. When raised on slender stalks they are called *pedicellate glands*, or *glandular hairs*, according to the thickness of the stalk.
3. Small, globular, oblong, or linear vesicles filled with oil, imbedded in the substance of leaves, bracts, floral organs, or fruits. They are often very numerous, like transparent dots; sometimes few and determinate in form and position. In the pericarp of *Umbelliferae* they are remarkably regular and conspicuous, and take the name of *vitte*.
4. Lobes of the disk, or other small, fleshy excrescences within the flower, whether from the receptacle, calyx, corolla, stamens, or pistils.

## II. ANATOMY AND PHYSIOLOGY.

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(Abridged from the writings of Professor Lindley and Professor Asa Gray.)

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150. *Vegetable Anatomy*, or the study of the microscopical structure of the compound organs of plants, and *Vegetable Physiology*, or the study of the functions which each organ performs during life, are distinct and extensive branches of botany, with which the merely systematic botanist,



or the student who uses a Flora for the purpose of ascertaining the names of plants, has not *necessarily* much concern. In this outline, therefore, we shall treat of these cognate sciences very briefly.

### § 1. *The Elementary Organs.*

151. If a very thin slice of a plant (say, of a succulent leaf or fruit) be magnified, it will be found to be made up of variously-shaped and arranged ultimate parts or *elementary organs*, forming a sort of honeycombed structure. The ultimate parts are called *cells*.

152. A *cell*, in its simplest state, is a closed membranous sac, formed of a substance permeable by fluids, though usually destitute of visible pores. When cells are combined, the mass is called a *tissue*; but each cell is a distinct individual, separately formed and separately acting, though cohering with the cells with which it is in contact, and partaking of the common life and action of the tissue of which it forms a part. The membranes separating the cells are called their walls.

153. Botanists usually distinguish the following tissues:—

- (a) *cellular tissue*, called also *pulp* and *parenchyma*, consists of roundish, oblong, cylindrical, hexagonal, or stellate thin-walled cells, and is found in every plant. All the soft part of leaves, the pith of stems, the pulp of fruits, and all young growing parts are formed of cellular tissue; and very many cryptogamic plants possess no other tissue. In it also are centred the most active functions of the living vegetable. It is the first tissue formed, and continues to be formed while growth continues, and when it ceases to be active, the plant dies.
- (b) *woody tissue*, or *pleurenchyma*, consists of long, slender cells tapering to each end, of a thicker, stronger, and much tougher substance than cellular tissue, but otherwise similarly organized. It constitutes the principal part of the wood, of the fibrous inner bark, and of the nerves and veins of leaves, sepals, and petals. It is not found in the lower Orders of Cryptogams.
- (c) *vascular tissue*, or *trachenchyma*, consists of very thin-walled, elongated tubes, variously marked. This tissue is of two principal kinds, the *spiral vessel* and the *duct*. *Spiral vessels*, often called *tracheæ*, contain highly elastic spiral fibre, usually capable of being unrolled; they meet or overlap at the ends, and where two such vessels adhere, the intervening membrane is absorbed, and they communicate freely. They are found round the pith in stems, and in all parts that emanate from it, especially along the nerves and veins of leaves; very rarely they occur in the wood or bark. *Ducts* are tubes usually of much greater diameter and length than the spiral vessel, containing a spiral fibre incapable of being unrolled, and often broken into imperfectly spiral bars, or rings, or dots, or disposed like the rungs of a ladder. They occur chiefly in the wood; are abundant in the wood of Ferns; but absent from the wood of Conifers; their functions are not clearly ascertained.
- (d) *laticiferous tissue*, or *cinenchyma*, consists of uninterrupted, anastomosing, thick-walled tubes, which contain a peculiar fluid called *latex*, usually turbid; often coloured red, white, or yellow, but often colourless. The use of this tissue is unknown.

154. Various modifications of cellular, woody, and vascular tissues are distinguished by vegetable anatomists, but need not be here enumerated. Other false elementary organs, such as *air-vessels*, *cysts*, *turpentine-vessels*, *oil-reservoirs*, etc., are all either intercellular cavities, or large cells filled with peculiar secretions.

155. A young and vitally active cell consists of the following parts :—1, the outer wall, a permeable, transparent membrane, formed of a chemical substance called *cellulose*; 2, a mucilaginous film lining the wall, and called “the *primordial utricle* ;” 3, the *nucleus*, or centre of cell-function or life, a soft, subgelatinous body occupying the middle of the cell, or ex-centrical; and 4, a viscid fluid, called *protoplasm*, filling the space between the nucleus and the primordial utricle. As the cell increases in size, its contents change; and finally, when it has attained its proper dimensions, the wall formed of cellulose alone remains as a persistent fabric, the nucleus is absorbed or dried up, and the protoplasm passes out into younger cells.

156. The principal organized contents of cells are :—

- (a) *sap*, the first product of the digestion of the inorganic food of plants: it contains the elements of vegetable growth in a dissolved condition.
- (b) *sugar*, of which there are two kinds, *cane-sugar* and *grape-sugar*, usually exists dissolved in the sap. It is found abundantly in growing parts, in fruits, and in germinating seeds.
- (c) *dextrine*, or vegetable mucilage, a gummy substance intermediate between sugar and starch.
- (d) *starch* or *fecula*, one of the most universal and conspicuous of cell-contents, and often so abundant in farinaceous roots and seeds as to fill the cell-cavity. It consists of minute grains, called *starch-granules*, which vary in size and shape, and are marked with more or less conspicuous concentric lines. Starch is unaffected by cold water, but forms a jelly with boiling water, and turns blue when tested by iodine.
- (e) *chlorophyll*, the green matter of plants, is of a resinous nature, and contains nitrogen. It is formed only under the action of sunlight, and is usually most abundant in the layers of cells immediately below the surface.
- (f) *chromule*, a name given to a similar colouring-matter when not green.
- (g) *wax*, *oils*, *camphor*, and *resinous* matters are common in cells; also various mineral substances, either in an amorphous state or as microscopic crystals, when they are called *raphides*. These last are peculiarly abundant in the tissues of the *Cacti* and *Rhubarb*.

## § 2. The Epidermis and its Processes.

157. The **Epidermis**, or outer skin of plants, is formed of one or more layers of vertically flattened, firmly coherent, and usually empty cells, with thin and transparent, or with thick and opaque walls. It covers all parts exposed to the air, except the stigma and glands; but is absent in parts submerged under water. It serves to protect the tissues from the immediate action of the air or of drought.

158. The epidermis is pierced by minute spaces between the cells, called *stomates*. They are oval or mouth-shaped, bordered by lips, formed of two or more elastic cells so disposed as to cause the stomate to open in a moist, and to close up in a dry state of the atmosphere. They communicate with intercellular cavities, and are obviously designed to regulate evaporation and respiration. Stomates are found abundantly on leaves, especially on the lower surface; in succulent leaves, though abundant, they are often in an imperfectly organized condition, and seemingly inactive.

159. *Hairs* are minute, transparent expansions of cellular tissue, proceeding from the epidermis. The hairs of roots are active absorbents;

those of stems and leaves serve to protect the surface, or to control evaporation, and sometimes act also as absorbents. They are more frequent on plants inhabiting dry or exposed situations, or on very Alpine plants, which are alternately exposed, at brief intervals, to extremes of heat and cold.

### § 3. *The Root.*

160. Anatomically the root differs from the stem in wanting normally developed leaf-buds (29), stomates (158), and in Exogens, a distinct pith. It increases in length by constant small additions to its extremity, and thus is enabled to force its way through the soil, and to diverge when rocks or obstacles oppose its progress.

161. The functions of the root are to fix plants in or to the soil or other substance on which the plant grows, to absorb nourishment either from the soil, or in the case of aerial roots, from the air, and to transmit it rapidly to the stem. Absorption takes place through the younger fibres or the extremities of the root-branches, and through hairs which are formed on all young roots, when growing vigorously. The nutriment thus absorbed consists chiefly of carbonic acid and nitrogen, or nitrogenous compounds, dissolved in water.

162. *Parasites* are plants whose roots bury themselves in the cellular structure of other plants, and subsist on nourishment sucked out of the plant which they attack. *Epiphytes* are those whose roots attach themselves to other plants without penetrating into their cellular tissues.

### § 4. *The Stem.*

163. Anatomically the stem consists of a cellular and a fibro-vascular system. The cellular system develops both vertically, as stems increase in length, and horizontally, as they increase in diameter. The fibro-vascular system is gradually introduced vertically, and serves to bind together and strengthen the cellular. It may be compared to the bony skeleton, the cellular to the flesh.

164. The stems of flowering plants are formed on one or other of the two following types:—

the *Exogenous structure*, in which the woody system is deposited in *annual concentric layers* between a *central pith* and an *exterior separable bark*. Plants having this structure of stem are **Exogens**.

the *Endogenous structure*, in which the woody system is deposited, not in concentric rings, but in separate, small bundles or threads of woody fibre, running through the cellular system without apparent order. In such stems there is no distinct pith, nor separable bark. Plants having this structure of stem are called **Endogens**.

165. The stems of the lower Cryptogamia consist wholly of cellular tissue; those of Ferns have an imperfect fibro-vascular system derived from the bases of old petioles.

166. In an *exogenous* stem a new layer or ring of wood is annually formed between the outermost preceding layer and the inner surface of the bark. In an *endogenous*, the new wood bundles are mingled with the old, or deposited toward the centre of the stem, whence they diverge towards the circumference in the lower part of their course. In an *Exogen* therefore the oldest, hardest, and most compact wood is found towards the centre of the stem; in an *Endogen* towards the circumference.

167. Anatomists distinguish the following parts in an Exogenous stem:—

(a) the *pith*, which is only active in young stems or growing



- branches, consists of cellular tissue, occupying the centre or longitudinal axis of the stem.
- (b) the *medullary sheath*, which surrounds the pith, abounds in spiral vessels (153, c), and is in direct connection, through its ramifications, with the leaf-buds, and the veins and nerves of leaves.
  - (c) the *wood*, which lies directly on the medullary sheath, is formed of woody tissue (153, b), through which, in most cases, *ducts* (153, c), variously disposed, are interspersed. A new circle of wood is annually formed, on the outside of the circle of the previous year; the age of a stem therefore may be ascertained, in a large number of cases, by counting the numbers of its rings of wood: in some cases of tropical trees and evergreen trees of temperate climates, several rings of wood are formed in a year. The older and denser, comparatively sapless wood, is called *heartwood* or *duramen*, and is often coloured; the younger, living and incompletely formed, is the *sapwood* or *alburnum*, and is usually white.
  - (d) the *medullary rays*, which originate in the pith, traverse the wood, and terminate in the bark, and are formed of cellular tissue: they occur as vertical plates, radiating from a centre, and keep up a communication between the living portion of the interior of the stem and its outer surface. As the heartwood is formed the inner portions of the medullary rays die. In wood they are what carpenters call the *silver-grain*.
  - (e) the *bark*, which lies outside the wood, and forms the outer layer of the stem. It is coated by the epidermis (157), and like the wood, consists of concentric layers; namely, the *corky layer*, or dry, outer bark, formed of hard, compressed cells; the *cellular* or *green* or middle bark, formed of loose, thin-walled, pulpy cells, containing chlorophyll (156, e); and the *liber* or inner bark, formed of long, tough, woody tissue, called *bast-cells*. The liber, like the wood, is annually deposited; the green layer is a product of the first year only, being soon choked by the corky envelope.

168. The mineral food of plants, absorbed by the roots, passes upwards through the younger wood of the stem, mixing with previously organized matter, but not being essentially altered; in this state it is called *sap* or *crude sap*. The crude sap, as it ascends through the stem, is attracted into the leaves, where it is exposed to the direct action of sunlight, under which influence alone can assimilation take place. As *assimilated* or *elaborated sap*, it is returned into the stem, and either used up in the processes of further growth, or deposited either in the wood, in the stock, in the perennial part of the stem or root, or in any other part of the plant where matter is stored up for future use.

### § 5. The Leaf.

169. Anatomically the leaf consists of a central fibro-vascular system or woody skeleton, derived from the woody system and medullary sheath of the stem; a cellular system surrounding the fibro-vascular, and interwoven with it, and derived from the middle bark; and an outer skin or epidermis, pierced by stomates.

170. The fibro-vascular system is arranged on two principal types:—

- (a) the exogenous, in which the nerves and veins branch irregularly and usually anastomose into a sort of network.
- (b) the endogenous, in which the principal nerves usually extend

unbranched from the base to the apex, and are connected by cross-bars or unbranched veins.

The first of these types is generally characteristic of *Exogens*, the latter of *Endogens*; but there are various intermediate conditions, and some Endogens have been called Dictyogens, because they have netted-veined leaves; several Exogens also have straight-veined leaves.

171. Leaves usually extend horizontally, and have an *upper* and an *under* surface, differing in anatomical structure. In the cellular stratum of the upper surface the cells are closely set and placed vertically, with their smallest ends next the surface; in the lower stratum the cells are more or less horizontal, more loosely placed, and very generally have large empty spaces between them.

172. Leaves are functionally the most active of the vegetable organs. In them the process of digestion or *assimilation* is chiefly conducted.

173. **Assimilation** is the name given to the process which accomplishes these following results:—

1. The chemical decomposition of the oxygenated matter of the sap, and of the carbonic acid which is absorbed by the leaves; resulting mainly in the liberation of pure oxygen, the fixation of carbon and the elements of water in the tissues of the plant.

Thus, through the powers of life, and under the influence of solar light and heat, *oxygen*, *hydrogen*, *nitrogen*, and *carbon*, or some of these, uniting in certain proportions, become *gluten*, *chlorophyll*, *gum*, *sugar*, or *starch*, etc.; and in like manner all other vegetable compounds pass from *dead* matter into the condition of *living* substance.

174. The oxygen liberated by plants during the process of assimilation passes into the air; and as assimilation is constantly going on during sunlight, the amount of oxygen thus poured into the air by plants is enormous, and indeed, so far as we know, vegetation is the only great operation in nature which restores to the air that free oxygen gas which is consumed by animals, and in all processes of combustion is indispensable to animal life.

### III. CLASSIFICATION.

175. It has been already said (2) that *descriptions* of plants should be arranged, as nearly as possible, under natural divisions, so as to facilitate the comparison of each plant with those most nearly allied to it. The descriptions here alluded to are descriptions of *species*; the *natural divisions* of the Flora refer to natural *groups of species*.

176. A **species** comprises all the individual plants which resemble each other sufficiently to make us conclude that they may all have descended from a common parent stock. These individuals may often differ from each other in striking particulars, such as colour of flower, size of leaf, etc.; but such differences, observation teaches us, may occur in seedlings, raised from one individual.

177. When a number of individuals of a species differ from the majority in any striking particular, they constitute a *variety*. If the variety generally comes true from seed, it is often called a *race*.

178. A **Variety** can be propagated with certainty only by grafts, cuttings, bulbs, or tubers, or other method which produces a new plant by the growth of buds taken from the old one. A *race* may very frequently, but not with certainty, be propagated by seed.

179. The known species of plants (now nearly 100,000) are far too numerous to be studied without classification. To facilitate their study, an admirable system, invented by Linnæus, has been universally adopted, viz. one common, substantive name is given to a number of species which

resemble each other more than they do any other species; the species so brought together are collectively called a **Genus**, and the common name is the *generic name*. Each species is further distinguished from the others of the same genus by the addition of an adjective epithet, or *specific name*. Every species has thus a botanical name of two words. In Latin, the language usually used for the purpose, the first word is a substantive usually of Greek origin and Latinized, and designates the genus; the second, usually a Latin adjective, indicates the species.

180. The genera thus formed being very numerous, they have been grouped together on similar principles—associating those which resemble each other most nearly—into *Families* or **Natural Orders**, to each of which a name has been given. This is, however, for the purpose of study or comparison. In speaking of a species it is only necessary to give the generic and specific names. The name of a Natural Order or Family, in Latin, is an adjective plural, usually formed from the name of some one *typical* genus, generally the best known, the first discovered, or the most marked. Thus *Ranunculaceæ* is the Order of which the *Ranunculus* is the typical genus; *Geraniaceæ* the Order of the *Geranium* and its allies, etc.

181. The number of species included in a genus, or the number of genera in an Order, is very unequal. Some genera contain but one, others but two or three species; in others, several hundred species are associated together. There is a similar discrepancy in the number of genera in the several Orders.

182. Orders are collected into **Classes**; and where Orders contain a large number of genera, or genera a large number of species, a further subdivision is required. The names of the several groups most generally adopted are as follows, beginning with the most comprehensive or highest divisions:—

**Classes :**

*Subclasses or Alliances.*

**Natural Orders :**

*Suborders.*

*Tribes.*

*Subtribes.*

*Divisions.*

*Subdivisions.*

**Genera :**

*Subgenera.*

*Sections.*

*Subsections.*

**Species :**

*Varieties.*

183. Classes, Orders, Genera, and their subdivisions, are called *natural*, when, in forming them, all resemblances and differences are taken into account, valuing them according to their importance; *artificial*, when resemblances and differences in some one, or very few particulars only, are taken into account.

#### IV. COLLECTION, PRESERVATION, AND EXAMINATION OF PLANTS.

184. Though plants can be most easily and satisfactorily examined when freshly gathered, yet as time will rarely admit of this being done, and as it is also desirable to compare with other plants previously observed or collected, *specimens* must be selected for leisurely observation at home, and for preservation for future reference.

185. A botanical **Specimen** should be, as much as possible, an epitome of the species which it represents, and if the species be variable, several specimens are necessary. To be perfect, it should have *root, stem, leaves, flowers* (both *open* and in *bud*), and *fruit* (both *young* and *mature*). It is not always, however, possible to gather such complete specimens; but the

collector should aim at *completeness*. *Fragments*, such as leaves without flowers, or flowers without leaves, are of comparatively little use.

186. All *small plants*, not exceeding 15 inches in height, should be plucked up by the roots, the whole plant forming a single specimen; or, if a many-stemmed plant, or one much branched near the base, and which if dried whole would make too *dense* a mass of branches or stems, it may be divided, *at the origin of the branches*, into several specimens.

187. If the plant to be dried be of greater length than 15 inches, and if it be thought desirable—either from the lower leaves differing from the upper, or from the branches being long and naked—to preserve the stem *unbroken*, the specimen may be folded in lengths of 15 inches. This is often done with *Grasses*, *Sedges*, and *Ferns*; and should be done in the cases of all long-stemmed, lax-leaved herbaceous, and with tall bulbous plants, in order to preserve an indication of their *habit*.

188. Herbaceous plants of large size, and specimens of the branches of shrubs and trees must be broken into pieces, say 10–15 inches long, the length varying with the nature or ramifications of the plant. The object is to preserve as much of the peculiar aspect of the plant as is possible.

189. At *least* a dozen specimens of each plant should (when practicable) be gathered, for the purpose of exchanging with other botanists. A collector can scarcely have too many duplicates, especially when his explorations are made in a little-frequented district. Many collect much more extensively.

190. The collector should be provided with:—

1. A quantity (at his discretion) of any stout, coarse, unsized paper, of uniform dimensions, say 12 inches by 18. Old newspapers answer the purpose, and common packing-paper, whity-brown, or brown, is most excellent. *Blotting-paper* is much too tender and expensive.
2. A smaller quantity of very thin, unglazed paper, or chemist's *filtering-paper*, for drying plants with delicate corollas (see 200).
3. Several flat, perforated boards, the size of the paper. Open wooden frames, with cross-bars, or frames of strong wire-work lattice, are better than boards, as they permit a freer evaporation.
4. A light *portfolio* of pasteboard, covered with calico, fitted up with 12–20 leaves of strong brown paper, furnished with a strap and buckle for closing, and another for slinging over the shoulders, is better and more portable than the old-fashioned collecting-box. The specimens, as gathered, are placed between the leaves, and may be crowded together, if not left too long without sorting.
5. A bag or haversack is also useful for collecting rigid-leaved or shrubby plants that might injure those in the portfolio.

191. If the plants be gathered in dry weather, no time should be lost in placing them under pressure; but they may be preserved for a day or two, if sprinkled with water, and enclosed in a tin box in a cool situation. *Ticket* the specimens, and add notes made whilst collecting.

192. On returning from the field, sort the specimens into those that are *fleshy* or *juicy*, and those that are of a drier nature, and dry them in separate bundles. If mixed together, the former are very apt to injure the latter, and to retard their drying.

193. The drying process is as follows:—Take one of the flat boards or frames, and lay three or four sheets of the drying-paper upon it. On these lay specimens, placing them as closely as they will lie without overlapping each other. Cover the specimens with a similar layer of paper; and on this lay other specimens; repeating alternately a layer of paper



and of specimens, till you have either placed in paper all the specimens collected, or made a sufficiently thick pile. Cover the pile with one of the flat boards, and place upon it a heavy weight,—large stones or bags of sand answer perfectly. If travelling, leather straps and buckles, drawn tightly across the bundle, are used instead of weights.

194. After the specimens have lain a day under pressure, the paper about them must be removed, and dry papers substituted; and this process should be repeated at intervals of a day or two till the plants are perfectly dry. If *many* sheets of paper be placed between each layer of specimens, or if *open frames* be used instead of boards, the changes need not be so frequent. In changing it is not necessary to lift every specimen from the sheet on which it lies; but if a dry sheet be placed over the specimens, the latter, with the moist sheet, may be tilted over to the dry, and the moist sheet then removed, and this process repeated through the bundle. Much time and trouble may thus be saved.

195. On the first day of shifting a sharp look-out should be kept for *caterpillars*, which are apt to secrete themselves in flowers, and, if not at once removed, will quickly destroy the specimens under pressure.

196. In fine weather the bundles of specimens, weighted or strapped, may be exposed to the strongest heat of the sun; but as this causes a rapid extraction of moisture, in order to ensure its passing away, the plants must, on bringing in, and while still warm, be shifted into fresh papers: otherwise mouldiness and decay, and not exsiccation, will ensue. Artificial heat, not greater than 140°, may be substituted in wet weather.

197. In drying plants within the tropics, and in all damp and hot climates, frequent shifting of papers is necessary; if neglected, the specimens will either fall to pieces, or become mouldy and rotten.

198. Fleishy fruits should be preserved in spirits; or carefully stretched, and the seeds or hard parts dried.

199. Succulent plants, Heaths, and plants with *compound* leaves (such as *Mimoseæ*), should be dipped (all but the flowers) for a few seconds into *boiling* water, before being placed in the drying-papers. This will *kill* them, promote the drying of succulents, and prevent the Heaths, etc., from shedding their leaves.

200. Plants with delicate corollas (*Iridææ*, *Oxalidææ*, etc.), should be placed between single leaves of very thin and soft, unglazed paper (filtering or tissue-paper). In shifting to dry papers the tissue-paper is not to be removed, but lifted with its contents to the dry layer. This will prevent the flowers from curling up or perishing.

201. When the specimens are quite dry and stiff, a *single* sheet of paper is sufficient between each layer; they may be placed still more closely on the sheets, but not piled one on another; and, finally, in sending specimens from a distance, great care must be taken to protect the bundles, by sufficient covering, from the effects of external moisture, or from the attacks of insects.

202. Having dried his plants, the student begins to form his **Herbarium**, or *Hortus Siccus*. The first step is to assort the specimens, first into their *classes*; then into *subclasses*, *Orders*, *genera*, and *species*. When this is done, he selects such specimens of such species as he wishes to retain for future reference, consigning the remainder to separate bundles labelled "*duplicates*," and keeping them for exchange with other botanists.

203. The specimens selected, having first been examined and named, are either fastened with thin glue to pieces of stiff white or cream-coloured cartridge-paper of a uniform size, or placed loosely, or secured by cross-bands or pins, in double sheets of soft paper. In either case the species belonging to each genus are placed within a common wrapper of strong

paper, and the name of the *genus* and *Natural Order* to which it belongs written on the left-hand corner near the base.

204. The most convenient size for the sheets of paper is 16 inches long by 10½ wide.

205. No more than one *species* should ever be fastened on one sheet of paper; but as many *specimens* as will conveniently fit may be placed side by side.

206. The name, place of growth, soil, elevation above the sea, season of flowering, colour of the flower, and if a shrub or tree, the height, nature of the wood, etc. and any useful information respecting the species, and not deducible from the specimen,—should be written on an attached label or on the sheet to which the specimen is fixed.

207. The sheets of species arranged under their genera and Orders, are kept in cabinets made with compartments to suit the size of the paper used.

208. When it is required to examine or dissect flowers or fruits that have been dried, it is necessary to soften them. If the parts are very delicate, this is best done by gradually moistening them in cold water; in most cases steeping them in boiling water or in steam, is usual, and is much quicker. Very hard fruits and seeds will require long boiling in order to dissect them easily.

209. For dissecting and examining flowers in the field, a penknife and a pocket lens of two or three powers, from half an inch to two inches focus, are sufficient. At home it is more convenient to have a mounted lens or simple microscope, with a stage holding a glass plate, upon which the flowers to be dissected may be laid, and a pair of dissecting-knives, one of which should be narrow and pointed, or a fine needle fixed in a handle; the other should have a pointed blade, with a sharp edge, to make clean sections across the ovary. A compound microscope is rarely necessary, except in cryptogamic botany. For the simple microscope, lenses of  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $1\frac{1}{2}$  inch focus are sufficient.

210. Many species vary within limits which it is very difficult to express in words. It may also happen that the specimen gathered may present some occasional or accidental anomalies peculiar to that single one, or to a very few individuals of the species. Hence the difficulty constantly experienced by the young student, and not seldom by the more expert botanist, of recognizing the various forms of a species by the technical characters assigned to it in a Flora. It may be useful, therefore, to point out a few of the anomalies likely to be met with, and we may divide them into two classes, as follows:—

1. *Aberrations from the ordinary type or appearance of a species, for which some general cause may be assigned.*

A bright light and open situation, particularly at considerable elevations or in high latitudes, without too much wet or drought, tends to increase the size and heighten the colour of flowers, in proportion to the stature and foliage of the plant.

Shade, on the contrary, especially if accompanied by richness of soil and sufficient moisture, tends to increase the foliage and draw up the stem, but to diminish the number, size, and colour of the flowers.

A hot climate and dry situation tend to increase the hairs, prickles, and other productions of the epidermis, to shorten and stiffen the branches, rendering thorny plants yet more spinous. Moisture in a rich soil has a contrary effect.

The neighbourhood of the sea, or a saline soil or atmosphere, imparts a thicker and more succulent consistence to the foliage and almost every part of the plant, and appears not un-

frequently to enable plants usually annual to live through the winter. Flowers in a maritime variety are often much fewer, but not smaller.

The luxuriance of plants growing isolated in a rich soil, and the dwarf, stunted character of those crowded in poor soil are well known. It is also well known how gradually the specimens of a species become stunted as we advance into the cold, damp regions of the summits of high mountain-ranges, or into high northern latitudes; and yet it is very frequently for want of attention to these circumstances that numbers of false species have been added to enumerations and Floras. Luxuriance entails not only increase of size of the whole plant or of particular parts, but increase of number of branches, or leaves, or leaflets of a compound leaf; or it may diminish the hairiness of the plant or induce thorns to grow out into branches, etc.

Capsules which, while growing, lie upon or close to the ground, will often become larger, more succulent, and less readily dehiscent, than those which are not so exposed to the moisture of the soil.

Herbs eaten down by sheep or cattle, or crushed underfoot, or burnt over, or otherwise checked in their growth, or trees or shrubs cut down to the ground, if then exposed to favourable circumstances of soil and climate, will send up luxuriant side-shoots, often so different in the form of their leaves, in their ramification and inflorescence, as to be scarcely recognizable for the same species.

Annuals which have germinated in spring and flowered without check, will often be very different in aspect from individuals of the same species, which having germinated later, are stopped by summer droughts or the approach of winter, and only flower the following season upon a second growth. The latter have often been mistaken for perennials.

Hybrids, or crosses between two species, come under the category of anomalies from a known cause. Frequent as they are in gardens, where they are artificially produced, they are probably rare in nature. Absolute proof of the origin of a plant found wild is of course impossible; but it is pretty generally agreed that the following particulars must always coexist in a wild hybrid. It partakes of the characters of its two parents; it is to be found isolated or almost isolated, in places where the two parents are abundant; if there are two or three, they will generally be dissimilar from each other, one partaking more of one parent, another of the other; it seldom ripens good seed; it will never be found where one of the parents grows alone. Where two *supposed* species grow together, intermixed with numerous intermediates bearing good seed, and passing more or less gradually from the one to the other, it may generally be concluded that the whole are varieties of one species. The beginner, however, must be very cautious not to set down a specimen as intermediate between two species, because it appears to be so in some, even the most striking characters, such as stature and foliage. Extreme varieties of one species are connected together by transitions in all their characters, but these transitions are not all observable in the same specimens. The observation of a single intermediate is, therefore, of little value, unless it be one link in a long series of intermediate forms, and, when met with, should lead to the search for other connecting links.



2. *Accidental aberrations from the ordinary type, that is, those of which the cause is unknown.*

These require the more attention, as they may sometimes lead the beginner far astray in his search for the genus, whilst the aberrations above reduced more or less to general laws, affect chiefly the distinction of species.

Almost all species with coloured flowers are liable to occur occasionally with white flowers.

Many may be found, even in a wild state, with double flowers, that is, with a multiplication of petals.

Plants which have usually conspicuous petals will occasionally appear without petals, either to the flowers produced at particular seasons, or to all the flowers of particular plants; or the petals may be reduced to narrow slips, or variously cut.

Flowers usually very irregular (81) may, on certain individuals, lose more or less of their irregularity. Spurs may disappear, or be produced on all, instead of only one of the petals.

One part may be occasionally added to or subtracted from the usual number of parts in each floral whorl, more especially in regular, polypetalous flowers.

The relative adhesion of the floral whorls may vary; hypogynous stamens appearing in flowers usually with perigynous, and free or half-free ovaries in flowers usually with adherent.

Plants usually monœcious or diœcious may become occasionally hermaphrodite, or hermaphrodite plants may produce occasionally unisexual flowers by the abortion of the stamens or of the pistils.

Leaves alternate where they are usually opposite; cut or divided where usually entire; variegated or spotted where usually of one colour, or the reverse,—must also be classed among those accidental aberrations which the botanist must always be on his guard against mistaking for specific distinctions.

# INDEX TO TERMS, ETC.

[The numbers refer to the paragraphs in the foregoing Introduction.]

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## TABLE OF THE CLASSES, ORDERS, ETC., OF THE SOUTH AFRICAN FLORA.

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In the following pages I have endeavoured to group the Natural Orders of South African plants in such a manner as to afford some indication of the principles according to which they have been brought into the sequence adopted in this work by Dr. Harvey. This sequence is in the main that proposed by Jussieu, and carried out by De Candolle, and most subsequent authorities. In so far as the limitation and order of the Classes and Subclasses and of the Cohorts and Orders of Monocotyledons and Acotyledons is concerned, it is no doubt a very natural system; but this is not so with the Orders of Angiospermous Dicotyledons, the arrangement of which is very artificial. The principle upon which De Candolle arranged the latter Orders involved two assumptions: one, that plants with their floral whorls complete, and each whorl regular and composed of separate parts (as *Polypetaleæ Thalamifloræ*), were more highly organized than those with fewer floral whorls, and these irregular, and their constituent parts combined (as in *Monopetaleæ*, etc.);—the other that the presence of but one whorl in the perianth, or of no perianth, indicated that such Orders should be kept apart from the rest. Advanced knowledge has, however, carried conviction to many minds, that Dicotyledonous plants with combined organs are really more highly organized than those with these parts free; that irregularity of flower prevails in the highest organized groups, and that the majority of the Orders with reduced floral envelopes are really members of other Orders whose prevailing features are of a complex and high type.

The fact is, that the Dicotyledonous Orders cannot be arranged in a linear series,—but as descriptions and arranged collections of them must follow a linear series, the Candollean is adopted for its facility, and because none better (though several others as good) has been proposed. It further possesses this advantage, that most of the Orders of the highest

types (as *Leguminosæ*, *Compositæ* and other *Monopetalæ*) stand towards the middle of the series, and the Orders of a lower type occupy the ends; thus the complete-flowered plants with much separated organs are those with which the series begins, and the incomplete-flowered Orders (some of which have no recognized affinity with higher ones) occupy the end of the series.

The extent to which this system is artificial is best illustrated by a few examples, thus:—

10, *Bixaceæ*, passes into 58, *Passifloreæ*, various genera actually uniting the two.

16 and 17, *Caryophyllæ*, passes into 62, *Ficoideæ*, 99, *Phytolacceæ*, 101, *Amaranthaceæ*, and 101, *Paronychieæ*.

22, *Malvaceæ*, passes into 109, *Euphorbiaceæ*.

34, *Olaceæ*, passes into 65, *Corneæ*, 66, *Loranthaceæ*, and 108, *Santalaceæ*; and many other cases might be quoted of Orders removed to three far distant groups by one or two characters alone, and these very inconstant ones. If it is asked, why then not bring all together? The answer is, if we do,—1, we should lose all means of finding the locality of any genus, without hunting through every group; and 2, we must often then intercalate between two Orders that are most closely related, another Order containing a vast number of plants not so much related to either Order as these two Orders are to one another. For instance, if we bring *Euphorbiaceæ* in between *Malvaceæ* and *Tiliaceæ*, we break up the character of the class, subclass, group, series, and cohort under which *Malvaceæ* and *Tiliaceæ* are classed, and thrust between these a vast host of Euphorbiaceous genera that are not so nearly related to *Malvaceæ* as *Tiliaceæ* are.

It must then be clearly understood, that the Natural Orders established throughout the vegetable kingdom are in the main perfectly natural groups, but that the so-called Natural system of plants is by no means a natural one, in respect of the sequence of the Dicotyledonous Orders, and that this is because they cannot be arranged naturally in a linear series. To classify these Orders arbitrary characters have been sought and used, which bring a larger proportion of them into proper position and sequence, but remove others very far from their proper places.—J. D. HOOKER.

#### CONSPECTUS OF THE CLASSES, COHORTS, ETC.

CLASS I. DICOTYLEDONES.—Stem, when perennial, with pith concentric layers of wood and bark. Leaves usually with branched and netted venation. Perianth usually of 4 or 5

parts in a whorl, or multiples of 4 or 5. Embryo with 2 cotyledons. In germination the radicle lengthens and branches.

SUBCLASS I. ANGIOSPERMEÆ. Order 1-116.

Group I. **Polypetales**.

Series 1. THALAMIFLORÆ.

|           |                         |            |
|-----------|-------------------------|------------|
| Cohort 1. | Ranales . . . . .       | Orders 1-4 |
| „ 2.      | Parietales . . . . .    | „ 5-12     |
| „ 3.      | Polygalinæ . . . . .    | „ 13-14    |
| „ 4.      | Caryophyllinæ . . . . . | „ 15-18    |
| „ 5.      | Guttiferales . . . . .  | „ 19-21    |
| „ 6.      | Malvales . . . . .      | „ 22-24    |

Series 2. DISCIFLORÆ.

|           |                       |              |
|-----------|-----------------------|--------------|
| Cohort 7. | Geraniales . . . . .  | Orders 25-33 |
| „ 8.      | Olacinales . . . . .  | „ 34-35      |
| „ 9.      | Celastrales . . . . . | „ 36-38      |
| „ 10.     | Sapindales . . . . .  | „ 39-40      |

Series 3. CALYCIFLORÆ.

|            |                         |              |
|------------|-------------------------|--------------|
| Cohort 11. | Rosales . . . . .       | Orders 41-49 |
| „ 12.      | Myrtales . . . . .      | „ 50-55      |
| „ 13.      | Passiflorales . . . . . | „ 56-60      |
| „ 14.      | Ficoidales . . . . .    | „ 61-62      |
| „ 15.      | Umbellales . . . . .    | „ 63-66      |

Group II. **Monopetales**.

Series 1. *Ovary inferior*.

|            |                        |              |
|------------|------------------------|--------------|
| Cohort 16. | Rubiales . . . . .     | Orders 67-68 |
| „ 17.      | Compositales . . . . . | „ 69-70      |
| „ 18.      | Campanales . . . . .   | „ 71         |

Series 2. *Ovary superior*.

|            |                         |           |
|------------|-------------------------|-----------|
| Cohort 19. | Ericales . . . . .      | Orders 72 |
| „ 20.      | Jasminales . . . . .    | „ 73-74   |
| „ 21.      | Primulales . . . . .    | „ 75-76   |
| „ 22.      | Plantaginales . . . . . | „ 77      |
| „ 23.      | Sapotales . . . . .     | „ 78-79   |
| „ 24.      | Gentianales . . . . .   | „ 80-83   |
| „ 25.      | Convolvulales . . . . . | „ 84-86   |
| „ 26.      | Personales . . . . .    | „ 87-92   |
| „ 27.      | Verbenales . . . . .    | „ 93-96   |

Group III. **Monochlamydeæ**.

|            |                         |           |
|------------|-------------------------|-----------|
| Cohort 28. | Nyctaginales . . . . .  | Orders 97 |
| „ 29.      | Chenopódiales . . . . . | „ 98-102  |
| „ 30.      | Penæales . . . . .      | „ 103-104 |
| „ 31.      | Laurales . . . . .      | „ 105-107 |
| „ 32.      | Santalales . . . . .    | „ 108     |
| „ 33.      | Euphorbiales . . . . .  | „ 109     |
| „ 34.      | Urticales . . . . .     | „ 110     |

Group IV. **Achlamydeæ.**

|            |                            |                |
|------------|----------------------------|----------------|
| Cohort 35. | Amentales . . . . .        | Orders 111-113 |
| „          | 36. Rhizanthales . . . . . | „ 114          |
| „          | 37. Piperales . . . . .    | „ 115          |

*Anomalous Order of Dicotyledons.*

## 116. Podostemaceæ.

## SUBCLASS II. GYMNOSPERMEÆ. Orders 117-119.

CLASS II. MONOCOTYLEDONES.—Stem, when perennial, without separable bark, wood, and pith. Veins of the leaf usually parallel, and if netted the veinlets are transverse and parallel. Perianth, when present, 3-6-merous. Stamens 3-6. Embryo with one cotyledon; the plumule lies in a cavity at its side. Radicle rarely elongating and branching.

Group I. **Petaloidææ.**

## SUBCLASS I. OVARY INFERIOR.

|           |                       |            |
|-----------|-----------------------|------------|
| Cohort 1. | Hydrales . . . . .    | Orders 120 |
| „         | 2. Amomales . . . . . | „ 121-122  |
| „         | 3. Iridales . . . . . | „ 123-127  |

## SUBCLASS II. OVARY SUPERIOR.

|           |                           |                |
|-----------|---------------------------|----------------|
| Cohort 4. | Alismales . . . . .       | Orders 128-129 |
| „         | 5. Arales . . . . .       | „ 130-131      |
| „         | 6. Palmales . . . . .     | „ 132          |
| „         | 7. Liliales . . . . .     | „ 133-136      |
| „         | 8. Commelynales . . . . . | „ 137-138      |
| „         | 9. Restiales . . . . .    | „ 139-140      |

Group II. **Glumaceæ.**

|            |                    |                |
|------------|--------------------|----------------|
| Cohort 10. | Glumales . . . . . | Orders 141-142 |
|------------|--------------------|----------------|

CLASS III. ACOTYLEDONES, OR CRYPTOGRAMÆ.—Plants cellular or vascular, without true stamens, pistil, or ovules. Organs of fructification usually very minute, giving origin to microscopic spores, by which the species are propagated. Spores germinating by a prothallium, or by microscopic threads.

## SUBCLASS I. ACROGENS.

|           |                       |                |
|-----------|-----------------------|----------------|
| Cohort 1. | Filicales . . . . .   | Orders 143-146 |
| „         | 2. Muscales . . . . . | „ 147-151      |

## SUBCLASS II. THALLOGENS. Orders 152-154.



## CONSPECTUS OF THE ORDERS.

## CLASS I. DICOTYLEDONES.

Subclass I. **ANGIOSPERMEÆ**.—Ovules enclosed in an ovary, and seeds in a seed-vessel.

## GROUP I. POLYPETALEÆ.

Perianth consisting of both calyx and corolla, the latter of distinct petals. (The exceptions are very numerous; for in all the large Orders, genera occur that want calyx or corolla, or both, and in some the petals cohere or are united into a monopetalous corolla.)

Series I. **Thalamifloræ**.—Sepals distinct, usually herbaceous, inferior. Stamens inserted usually immediately under the ovary, rarely on a lobed or expanded disk, free from the calyx, very rarely on the base of the petals. Ovary very rarely inferior.

Cohort I. **RANALES**.—Stamens very numerous (few, and opposite the petals in *Menispermaceæ*). Carpels distinct or immersed in a fleshy torus in *Nymphaeaceæ*. Embryo small, in fleshy or mealy albumen.—Herbs, rarely shrubs or trees.

- Order 1. *Ranunculaceæ* (p. 1). All herbaceous but *Clematis*.  
 „ 2. *Anonaceæ* (p. 2).  
 „ 3. *Menispermaceæ* (p. 3). } Flowers usually 3- or 6-merous.  
 „ 4. *Nymphaeaceæ* (p. 4). All aquatics.

Cohort II. **PARIETALES**.—Stamens definite or indefinite. Ovary 1-celled, with parietal placentation, rarely (as in *Cruciferae*) divided into 2 cells by a membranous expansion of the placenta.

- Order 5. *Papaveraceæ* (p. 5). } These Orders are usually united.  
 „ 6. *Fumariaceæ* (p. 5). }  
 „ 7. *Cruciferae* (p. 6). Herbs, all with alternate exstipulate leaves.  
 „ 8. *Capparideæ* (p. 11).  
 „ 9. *Resedaceæ* (p. 13).  
 „ 10. *Bixaceæ* (p. 13). Has equal affinity with Cohort 13, *Passiflorales*.  
 „ 11. *Violariæ* (p. 17).  
 „ 12. *Droseraceæ* (p. 17). More closely allied to 44, *Saxifrageæ*.

Cohort III. **POLYGALINEÆ**.—Flowers regular or irregular. Sepals and petals each 5, rarely 3 or 4. Stamens 5 or 10. Ovary 2-celled, usually of 2 carpels; ovules numerous, horizontal or pendulous and solitary. Albumen fleshy, rarely absent.

- Order 13. *Polygaleæ* (p. 18). Flowers very irregular.  
 „ 14. *Pittosporæ* (p. 19). Flowers regular.

Cohort IV. **CARYOPHYLLINEÆ**.—Flowers regular. Sepals 2-5, free, rarely united. Petals as many, connate at the base in some *Portulacææ*. Stamens as many as the petals, alternate with them. Ovary 1-celled; ovules attached to a free basal placenta. Embryo usually curved round mealy albumen.—Chiefly herbs.

- Order 15. *Frankeniaceæ* (p. 20). Embryo straight.  
 „ 16. *Caryophyllaceæ* (p. 20).

Order 17. *Portulacæ* (p. 23). Ovary inferior in *Portulaca*.

„ 18. *Tamariscinæ* (p. 25). Albumen 0 in *Tamarix*.

Cohort V. GUTTIFERÆ.—Flowers regular. Sepals and petals 4 or 5, the former imbricate. Stamens usually indefinite. Ovary 3-many-celled, ovules attached to the inner angles of the cells.—Leaves usually opposite and exstipulate.

Order 19. *Elatinæ* (p. 25).

„ 20. *Hypericinæ* (p. 25).

„ 21. *Guttiferæ* (p. 26).

Cohort VI. MALVÆ.—Flowers regular. Sepals or calyx-lobes 4-5, valvate. Petals 4-5, twisted in bud. Stamens usually very numerous, free or monadelphous. Ovary 3-many-celled, or of 3 or many free carpels; ovules attached to the inner angles of the cells. Leaves stipulate.

Order 22. *Malvææ* (p. 27). Stamens united to base of connate petals. Anthers 1-celled, opening outwards.

„ 23. *Sterculiææ* (p. 30). Anthers 2-celled, opening outwards. Flowers 5-7-merous, unisexual and apetalous in *Sterculia*.

„ 24. *Tiliææ* (p. 32). Inner bark very tough, often used as cordage. Disk sometimes conspicuous.

Series II. **Disciflorææ**.—Sepals distinct, rarely connate, imbricate, rarely valvate, or adnate with the ovary. Disk usually very evident; expanded into a torus or a ring, or conspicuous lobes or glands. Petals inserted at the base of the disk. Stamens usually definite, inserted at the base of or upon or within or between the lobes of the disk. Ovary free, or immersed in the disk, rarely inferior.

Cohort VII. GERANIALES.—Flowers regular or irregular. Sepals and petals 3-5. Disk annular, within the stamens, or of glands alternating with the petals. Stamens usually definite. Carpels free or combined; ovules 1-2, attached to the inner angle of the cells or carpels, pendulous, with the raphe towards the axis.

Order 25. *Linææ* (p. 34). Disk 0 in *Erythroxylon*.

„ 26. *Malpighiææ* (p. 35). Calyx-lobes often with glands at back.

„ 27. *Zygophylleæ* (p. 36). Petals twisted, 0 in *Augea* and *Seetzenia*.

„ 28. *Geraniææ* (p. 38). Flowers often irregular. Disk 0 in *Impatiens*.

„ 29. *Rutææ* (p. 41). Leaves with pellucid dots. Disk and petals 0 in *Empleurum*.

„ 30. *Ochnææ* (p. 46). Sepals persistent. Disk enlarged after flowering.

„ 31. *Burserææ* (p. 47). Flowers usually polygamous. Disk usually cup-shaped.

„ 32. *Meliææ* (p. 47). Stamens usually monadelphous.

„ 33. *Chailletiææ* (p. 49). Petals 2-lobed.

Cohort VIII. OLACINALES.—Flowers regular, hermaphrodite or unisexual. Calyx small. Petals, if present, often valvate. Disk cup-shaped or glandular. Stamens definite. Ovary 1-celled, with 1-3 ovules pendulous from a central placenta, or 2- or more celled, with 1-2 ovules pendulous from the top of each cell; ovules with the raphe turned away from the axis.—Leaves simple, usually exstipulate.

Order 34. *Olaceae* (p. 49). Disk annular or 4-5-lobed.

„ 35. *Ilicineae* (p. 50). Disk 0.

Cohort IX. CELASTRALES.—Flowers regular or irregular, always small and usually hermaphrodite. Sepals and petals 4-5. Disk cushion-like and adnate to the base of the calyx. Stamens definite on the margin or base of the disk. Ovary 2- or more celled, free or immersed in the disk; ovules 1-2, erect from the base of the cells, with the raphe next the axis, rarely 3-6, attached to the inner angle of the cells.—Leaves simple, except in *Ampelideae*.

Order 36. *Celastrineae* (p. 51). Flowers small. Ovary sometimes sunk in disk. Ovules 6-8 in *Cathastrum* and *Putterlickia*.

„ 37. *Rhamneae* (p. 55). Ovary often inferior or adhering to the calyx. Petals often absent, always minute.

„ 38. *Ampelideae* (p. 57). Petals valvate, often cohering at the tips.

Cohort X. SAPINDALES.—Flowers regular or irregular, usually unisexual. Disk adnate to the base of the calyx. Stamens definite or indefinite, inserted upon or within the disk. Ovary 1- or more celled; ovules 1-2 in each cell, erect from its base, or pendulous from a basal funicle.—Leaves often compound.

Order 39. *Sapindaceae* (p. 58). Petals usually 1 fewer than the calyx-lobes, or 0, often with a claw at the base. Stamens often 8, and disk often unilateral.

„ 40. *Anacardiaceae* (p. 62). Petals 0 or as many as calyx-lobes. Stamens usually twice as many.

Series III. **Calyciflorae**.—Sepals connate into a more or less distinct tube, which is free or adnate to the ovary. Disk usually indistinguishable from the calyx-tube. Petals as many as the sepals, inserted with the stamens on the calyx-tube or on the base of its lobes. Ovary very often more or less inferior.

Cohort XI. ROSALES.—Flowers regular or irregular, usually 5-merous and hermaphrodite. Stamens definite or indefinite. Carpels 1 or more, free, rarely united more or less; styles usually distinct, or separable.—Leaves simple or compound.

Order 41. *Connaraceae* (p. 65).

„ 42. *Leguminosae* (p. 65). Stamens indefinite in *Mimoseae*.

„ 43. *Rosaceae* (p. 93.) Petals 0 in *Alchemilla*, *Poterium*, and *Cliffortia*.

„ 44. *Saxifrageae* (p. 97). Disk large in *Brexia*.

„ 45. *Crassulaceae* (p. 99). Perigynous scales opposite the carpels in many species.

„ 46. *Hamamelideae* (p. 102). Flowers unisexual and apetalous in *Trichocladus*. *Grubbia* should perhaps be referred to *Santalaceae*.

„ 47. *Bruniaceae* (p. 103). Petals connate in *Lonchostoma*.

„ 48. *Halorageae* (p. 106). Flowers very imperfect in all the species.

„ 49. *Balanophoreae* (p. 107). Flowers extremely imperfect. The Order has been placed next to *Santalaceae* recently by Dr. Eichler, of Munich.

Cohort XII. MYRTALES.—Flowers usually both regular and hermaphrodite. Stamens definite or indefinite, 4-5-merous. Disk 0 or covering the ovary.

Ovary inferior ; style very rarely divided.—Leaves simple, and usually entire.

- Order 50. *Rhizophoræ* (p. 108). Ovary free in *Weihea*.  
 „ 51. *Combretaceæ* (p. 109). Flowers polygamous and apetalous in *Terminalia*.  
 „ 52. *Myrtaceæ* (p. 110).  
 „ 53. *Melastomaceæ* (p. 112). Anthers often of two forms and colours in each flower.  
 „ 54. *Lythrarieæ* (p. 114). *Heteropyxis* has stamens opposite the petals, and pellucid dotted leaves as in *Myrsineæ*.  
 „ 55. *Onagrarieæ* (p. 116). *Montinia* has unisexual flowers and parietal placentas.

Cohort XIII. PASSIFLORALES.—Flowers regular, unisexual or hermaphrodite. Calyx free or connate with the ovary. Stamens various. Ovary 1-celled, with parietal placenta.

- Order 56. *Turneraceæ* (p. 119).  
 „ 57. *Loasaceæ* (p. 119). Ovary 3-celled in the only Cape genus, with cells 1-ovuled.  
 „ 58. *Passifloreæ* (p. 120).  
 „ 59. *Cucurbitaceæ* (p. 122).  
 „ 60. *Begoniaceæ* (p. 128). Ovary 2–3-celled.

Cohort XIV. FICOIDALES.—Flowers hermaphrodite, usually regular. Calyx free or adnate to the ovary. Stamens numerous, rarely few. Ovary 1-celled, with parietal placenta, or 2- or more celled, with basilar ovules. Embryo usually curved.—Leaves quite entire or 0.

- Order 61. *Cactææ* (p. 129). Succulent, leafless, spinous plants.  
 „ 62. *Ficoideæ* (p. 129). Petals often 0. Stamens sometimes hypogynous. (Closely related to *Caryophylleæ* and *Phytolacceæ*.)

Cohort XV. UMBELLALES.—Flowers small. Calyx adnate to the ovary. Stamens as many as the petals. Disk crowning the ovary. Ovary inferior, 1–2- or more celled ; styles usually free ; ovules 1 in each cell, rarely 2, pendulous. Ripe carpels indehiscent. Embryo minute, in copious albumen.—Leaves often compound.

- Order 63. *Umbelliferæ* (p. 135).  
 „ 64. *Araliaceæ* (p. 146).  
 „ 65. *Corneæ* (p. 147).  
 „ 66. *Loranthaceæ* (p. 148). Corolla monopetalous in *Loranthus*. Flowers unisexual in *Viscum*. (This Order should be placed next to *Santalaceæ*.)

## GROUP II. MONOPETALEÆ.

Perianth consisting of both calyx and corolla ; the petals of the latter combined.

Series I. *Ovary inferior*.

Cohort XVI. RUBIALES.—Stamens inserted on the corolla-tube. Ovary 2- or more celled ; style usually simple or 2-fid at the apex only ; ovules 1 or more in each cell.—Leaves very rarely toothed or cut.

- Order 67. *Rubiaceæ* (p. 148).  
 „ 68. *Valerianeæ* (p. 157). Fruit 1-celled in *Valeriana*.

Cohort XVII. COMPOSITALES.—Stamens inserted on the corolla-tube. Ovary 1-celled; style simple or 2-fid at the apex; ovules solitary.—Leaves simple or compound.

Order 69. *Dipsacæ* (p. 158). Corolla imbricate. Stamens free.

„ 70. *Compositæ* (p. 158). Corolla valvate. Anthers united.

Cohort XVIII. CAMPANALES.—Stamens usually epigynous. Ovary 2-10-celled; style simple; ovules usually numerous.—Herbs, rarely shrubs; leaves simple.

Order 71. *Lobeliaceæ* (p. 209). Petals sometimes free in *Cyphia*. Ovules solitary in each cell in *Scævola*. Stamens on the corolla in *Rhigiophyllum*.

Series II. *Ovary superior*.

Cohort XIX. ERICALES.—Flowers regular, hermaphrodite. Stamens as many as corolla-lobes, hypogynous or epigynous, rarely on the corolla, all equal. Disk usually evident. Ovary 3-more-celled; style and stigma simple; ovules numerous on the inner angle of the cells.—Usually shrubs or trees; leaves alternate, exstipulate, simple.

Order 72. *Ericacæ* (p. 215).

Cohort XX. JASMINALES.—Flowers often unisexual, regular. Petals sometimes free. Stamens 2 or more, inserted on the corolla, alternate with its lobes. Disk 0. Ovary 1-2-celled; style simple or 2-fid; ovules 1-2 in each cell.—Shrubs or trees; leaves opposite, simple or compound.

Order 73. *Jasmineæ* (p. 219).

„ 74. *Salvadoracæ* (p. 220). Petals free.

Cohort XXI. PRIMULALES.—Flowers usually hermaphrodite, regular. Petals very rarely free. Stamens 4-5, all opposite the corolla-lobes, small. Ovary 1-celled, with free central placenta.—Herbs shrubs or trees; leaves simple, alternate, exstipulate.

Order 75. *Myrsinæ* (p. 220). Ovary inferior in *Mæsa*. Petals free in *Embelia*.

„ 76. *Primulacæ* (p. 221). Ovary half inferior in *Samolus*.

(Order 94. *Plumbagineæ*, should come here.)

Cohort XXII. PLANTAGINALES.—Flowers hermaphrodite, regular. Corolla persistent. Stamens alternate with the corolla-lobes, filaments long and pendulous; anthers versatile. Ovary 2-4-celled; style simple; stigma filiform, hispid. Fruit dehiscing transversely.—Herbs.

Order 77. *Plantagineæ* (p. 223).

Cohort XXIII. SAPOTALES.—Flowers often hermaphrodite, regular. Corolla 4-24-lobed. Stamens (with alternating staminodes) solitary or in fascicles opposite the corolla-lobes. Ovary 2-12-celled; cells 1-2-ovuled. Stigma as many lobed as cells.—Trees or shrubs.

Order 78. *Sapotacæ* (p. 223).

„ 79. *Ebenacæ* (p. 224).

Cohort XXIV. GENTIANALES.—Flowers hermaphrodite, regular. Corolla 4-5-lobed. Stamens 4-5, alternate with the corolla-lobes. Ovary 2-



celled, with usually numerous ovules in each cell; stigma simple or 2-lobed. Fruit a capsule or berry.—Leaves opposite, usually without stipules and quite entire.

Order 80. *Asclepiadeæ* (p. 226). Pollen collected in masses like those of *Orchideæ*.

„ 81. *Apocynæ* (p. 244).

„ 82. *Loganiaceæ* (p. 248). Leaves often stipulate.

„ 83. *Gentianæ* (p. 250). Leaves alternate in tribe *Menyantheæ*.

Cohort XXV. CONVULVULALES.—Flowers hermaphrodite, regular. Corolla 4–10- usually 5-parted; lobes plaited in æstivation. Stamens as many as and alternate with corolla-lobes. Ovary on a disk, 2–4-celled; ovules definite or indefinite; stigma simple or 2-lobed.—Leaves almost always alternate.

Order 84. *Convolvulaceæ* (p. 253). Carpels separate in *Falkia* and *Dichondra*.

„ ? 85. *Hydrophyllaceæ* (p. 256).

„ 86. *Solanaceæ* (p. 256).

Cohort XXVI. PERSONALES.—Flowers hermaphrodite, irregular. Corolla often 2-lipped. Stamens usually fewer than the corolla-lobes, and unequal in length. Ovary on a disk, 2-celled (rarely 1-celled), many-ovuled; style usually slender; stigma simple or 2-fid.—Leaves almost always opposite, exstipulate.

Order 87. *Scrophulariaceæ* (p. 259).

„ 88. *Lentibularinæ* (p. 273) Ovary 1-celled, with free central placenta.

„ 89. *Orobanchææ* (p. 274). Leaves 0, or reduced to alternate scales.

„ 90. *Bignoniaceæ* (p. 274).

„ 91. *Gesneriaceæ* (p. 276). Leaves often alternate.

„ 92. *Acanthaceæ* (p. 279).

Cohort XXVII. VERBENALES.—Flowers irregular, rarely regular, hermaphrodite. Corolla usually unequally 2-lipped. Stamens usually fewer than the corolla-lobes, often unequal in length. Ovary 2–4-celled; cells 1-ovuled; style usually filiform; stigma simple or 2-lobed. Fruit a 2–4-celled berry or drupe of 4 little nuts.—Leaves opposite or alternate.

Order 93. *Verbenaceæ* (p. 287).

„ 94.\* *Plumbaginææ* (p. 295). Flowers regular. Corolla often of 5 petals, with as many opposite stamens. Ovary 1-celled, with 3–5 styles.

„ 95. *Boraginææ* (p. 296).

„ 96. *Labiataæ* (p. 301).

### GROUP III. MONOCHLAMYDEÆ.

Perianth consisting of one series, there being no distinct calyx and corolla, regular or nearly so in all but 107, *Proteaceæ*.

Cohort XXVIII. NYCTAGINALES.—Flowers hermaphrodite, regular. Perianth coloured, upper part deciduous, lower hardening round the fruit. Stamens definite, hypogynous. Ovary 1-celled, 1-ovuled; style 1.

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\* I introduce this Order here, in conformity with Dr. Harvey's sequence of the Orders, but it should be placed under Cohort XXI. PRIMULALES.

Order 97. *Nyctagineæ* (p. 308).

Cohort XXIX. CHENOPODIALES.—Flowers usually hermaphrodite and regular. Perianth various. Stamens usually definite and perigynous. Ovary 1-celled, with 1 or several ovules; styles 1 or more. Fruit indehiscent. Embryo usually curved in mealy albumen.—Herbs, very rarely shrubs or trees.

Order 98. *Polygoneæ* (p. 309). Ovary 1-ovuled.

„ 99. *Phytolacceæ* (p. 310). Ovary of many 2-ovuled carpels.

„ 100. *Chenopodiææ* (p. 311). Flowers irregular and unisexual in various genera.

„ 101. *Amarantaceæ* (p. 315).

„ 102. *Paronychieæ* (p. 319).

Cohort XXX. PENÆALES.—Flowers hermaphrodite, regular. Perianth 4-lobed. Stamens 4, alternate with the lobes of the perianth, or 8, 4 opposite and 4 alternate. Ovary 2-4-celled; cells 2-4-ovuled; stigmas 4 or 1, 4-lobed. Fruit capsular.—All shrubs, with opposite entire leaves.

Order 103. *Penæaceæ* (p. 321).

„ 104. *Geissolomeæ* (p. 323).

Cohort XXXI. LAURALES.—Flowers hermaphrodite, usually regular. Perianth herbaceous, or coriaceous tubular and 4-5-lobed, or spreading and 4-9-lobed. Stamens definite, inserted on the perianth. Ovary free, 1-celled; ovules 1 or several, pendulous; style and stigma simple. Fruit indehiscent.—Shrubs and trees with alternate leaves.

Order 105. *Thymeleæ* (p. 323). Bark very tough.

„ 106. *Laurineæ* (p. 327). Anthers opening by valves.

„ 107. *Proteaceæ* (p. 328). Perianth often irregular.

Cohort XXXII. SANTALALES.—Flowers often unisexual. Perianth usually minute, 4-5-lobed. Stamens 4-5, opposite the perianth-lobes. Ovary inferior, 1-celled, with 2-4 ovules pendulous from a free central placenta; stigma usually lobed. Fruit 0, indehiscent.—Herbs shrubs or trees.

Order 108. *Santalaceæ* (p. 332).

Cohort XXXIII. EUPHORBIALES.—Flowers unisexual. Perianth various, sometimes wanting. Stamens definite or indefinite. Ovary 2- or more celled; cells 1-2-ovuled; stigmas as many as the ovary-cells or as often lobed. Fruit capsular, very rarely fleshy.—Herbs shrubs and trees of very various habit.

Order 109. *Euphorbiaceæ* (p. 334).

Cohort XXXIV. URTICALES.—Flowers usually unisexual and regular. Perianth herbaceous, of 3 or more lobes or leaflets. Stamens usually as many as the perianth-lobes and opposite them; filaments inflexed in bud, elastic. Ovary 1-celled, 1-ovuled; style simple or 2-fid. Fruit never capsular, often compound.—Herbs shrubs and trees of very various habit.

Order 110. *Urticaceæ* (p. 342).

(See Cohort XXXV. RHIZANTHALES.)

#### GROUP IV. ACHLAMIDEÆ.

Perianth 0; the stamens and pistils being usually placed in the axils of

the bracts of cones or catkins. Flowers almost always minute and unisexual.

Cohort XXXV. AMENTALES.—Flowers unisexual, in the axils of the scales of catkins. Stamens usually indefinite. Ovary 1- or more celled. Fruit rarely capsular, most often 1-seeded.—Trees or shrubs with deciduous stipules.

Order 111. *Betulaceæ* (p. 346).

„ 112. *Salicineæ* (p. 347).

„ 113. *Myricæ* (p. 347).

Cohort XXXVI. RHIZANTHALES.\*—Flowers unisexual. Perianth superior, fleshy, valvate or imbricate. Stamens indefinite, monadelphous. Ovary 1-celled, with parietal or pendulous many-ovuled placentas. Seeds very minute.—Parasitical plant, with leaves reduced to scales or 0.

Order 114. *Rafflesiaceæ* (p. 348).

Cohort XXXVII. PIPERALES.—Flowers minute, uni- or bisexual, in slender, rarely short, dense catkins, that are usually clothed with minute peltate scales or bracts. Stamens 2 or more, free. Ovary 1-4-celled; cells 1-ovuled. Fruit various, usually a small berry.—Herbs or undershrubs, with jointed stems and usually opposite leaves.

Order 115. *Piperaceæ* (p. 349).

*Order of altogether doubtful affinity.*

„ 116. *Podostemaceæ* (p. 350).

Subclass II. GYMNOSPERMEÆ.—Ovules naked, not enclosed in an ovary, usually placed in the axils of the bracts or scales of a cone.

Order 117. *Gnetaceæ* (p. 351).

„ 118. *Coniferæ* (p. 352).

„ 119. *Cycadeæ* (p. 353).

## CLASS II. MONOCOTYLEDONES.

### GROUP I. PETALOIDEÆ.

Flower with a distinct and usually coloured perianth of 1 or 2 whorls.

Subclass I. EPIGYNEÆ.—Ovary inferior.

Cohort I. HYDRALES.—Flowers hermaphrodite, regular. Perianth in 2 series, or 1, or absent. Embryo exalbuminous.—All aquatics.

Order 120. *Hydrocharideæ* (p. 355).

Cohort II. AMOMALES.—Flowers very irregular, hermaphrodite. Perianth of 2 or more series, outer often petaloid. Stamens 1-2. Ovary 3-celled; cells with numerous ovules.

Order 121. *Scitamineæ* (p. 355).

„ 122. *Orchidaceæ* (p. 356).

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\* This Cohort, being monochlamydeous, should have come in after XXXIV. URTICALES.

Cohort III. IRIDALES.—Flowers usually quite regular, hermaphrodite. Perianth-lobes all petaloid. Stamens 3 or 6. Ovary 3-celled; cells with numerous ovules. Seeds albuminous.

Order 123. *Burmanniaceæ* (p. 369).

„ 124. *Dioscorideæ* (p. 370).

„ 125. *Irideæ* (p. 370). Perianth sometimes irregular.

„ 126. *Hæmodoraceæ* (p. 376). Perianth inferior in some genera, and ovules solitary in some.

„ 127. *Amaryllideæ* (p. 378).

Subclass II. HYPOGYNEÆ.—Ovary superior.

Cohort IV. ALISMALES.—Flowers regular, hermaphrodite or unisexual. Perianth in 2 series, or 1 or 0, outer or all herbaceous. Stamens definite or indefinite. Albumen 0.—Aquatic plants.

Order 128. *Alismaceæ* (p. 385).

„ 129. *Naiadeæ* (p. 386).

Cohort V. ARALES.—Flowers regular or irregular, usually unisexual and arranged in a spadix; often very incomplete. Perianth 0, or of a few scales or hair-like organs. Stamens various. Ovary usually 1-celled, 1- or many-ovuled. Fruit never capsular.

Order 130. *Aroideæ* (p. 388).

„ 131. *Typhaceæ* (p. 390).

Cohort VI. PALMALES.—Flowers regular, usually arranged on a spadix. Perianth of 6 leaflets in 2 series. Stamens usually 6, hypogynous. Ovary 1-3-celled, cells 1-ovuled.

Order 132. *Palmceæ* (p. 390).

Cohort VII. LILIALES.—Flowers usually regular and hermaphrodite. Perianth of 6 pieces in 2 rows, outer usually petaloid. Stamens 6, opposite the perianth-lobes. Ovary 3-celled; cells many-ovuled. Fruit usually capsular.

Order 133. *Liliaceæ* (p. 391).

„ 134. *Melanthaceæ* (p. 403).

„ 135. *Smilaceæ* (p. 405).

„ 136. *Junceæ* (p. 407). Perianth coriaceous or almost glumaceous. Ovary 1-celled in *Luzula*.

Cohort VIII. COMMELYNALÆ.—Flowers regular or irregular, hermaphrodite. Perianth of 6 segments in 2 rows: outer herbaceous or glumaceous, inner petaloid. Stamens very unequal, some much smaller and usually wanting perfect anthers. Ovary 1- or 3-celled; cells few- or many-ovuled. Fruit capsular.

Order 137. *Commelyneæ* (p. 408).

„ 138. *Xyrideæ* (p. 410).

Cohort IX. RESTIALES.—Flowers regular or irregular, unisexual. Perianth of 4 or 6 glumaceous or scarios segments in 1-2 rows, or wanting or reduced to a scale. Stamens 1-3, free or united in a cup. Ovary usually 3-celled; ovules 1 pendulous in each cell. Fruit capsular, membranous or rigid, 1-3-celled; cells 1-seeded.

Order 139. *Eriocaulineæ* (p. 411). Anthers 2-celled.

„ 140. *Restiaceæ* (p. 411). Anthers 1-celled.

#### GROUP II. GLUMACEÆ.

Flowers minute, in the axils of chaff-like scales or bracts, which are usually arranged in spikes, spikelets, or catkins. Perianth 0, or very imperfect.

Cohort X. GLUMALES.—Characters of the Group.

Order 141. *Cyperaceæ* (p. 416). Anthers attached at base.

„ 142. *Gramineæ* (p. 427). Anthers versatile.

#### CLASS III. ACOTYLEDONES OR CRYPTOGRAMÆ.

Subclass I. ACROGENS.—Stems and leaves obviously distinct, the former increasing by additions to their summits. Spores contained in distinct capsules.

Cohort I. FILICALES.—Stems with vascular tissue.

Order 143. *Filices* (p. 458).

„ 144. *Lycopodiaceæ* (p. 470).

„ 145. *Marsileaceæ* (p. 471).

„ 146. *Equisetaceæ* (p. 471).

Cohort II. MUSCALES.—Stems without vascular tissue.

Order 147. *Musci*.\*

„ 148. *Jungermannieæ*.

„ 149. *Marchantieæ*.

„ 150. *Ricciaceæ*.

„ 151. *Characeæ*.

Subclass II. THALLOGENS.—Stems and leaves not obviously distinct, the whole plant cellular and consisting of variously formed fronds (often called *thalli*) or of threads of simple cells. Spores usually immersed in the substance of the frond.

Order 152. *Lichens*.

„ 153. *Fungi*.

„ 154. *Algæ*.

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\* This and the following Orders (148–154) are not included in this work, as explained in the preface.—J. D. H.



## CLASS I. DICOTYLEDONS OR EXOGENS.

### SUBCLASS I. *THALAMIFLORÆ*.

#### ORDER I. *RANUNCULACEÆ*.

Flowers bisexual. Stamens many, hypogynous; filaments slender; anthers adnate. Carpels separate, few or many.—Climbing shrubs or herbs.

Climbing, slender shrubs, with opposite leaves . . . 1. *CLEMATIS*.

Herbaceous plants. Leaves alternate or radical.

Sepals coloured like petals (no true petals).

Sepals 4-5. Carpels few, without tails . . . 2. *THALICTRUM*.

Sepals many. Carpels many, with tails . . . 3. *ANEMONE*.

Sepals green. Petals present.

Petals with simple claws. Carpels of fruit fleshy 4. *KNOWLTONIA*.

Petals with a scale or pit on the claw. Carpels  
of fruit dry . . . 5. *RANUNCULUS*.

##### 1. *CLEMATIS*, Linn.

Sepals 4-8, coloured like petals, valvate in the bud. Petals none. Carpels many, 1-seeded, dry, with hairy tails.—*Fl. Cap.* i. p. 1; *Thes. Cap.* t. 8, 9.

Climbing or suberect, vine-like shrubs. Leaves opposite, 2-3-pinnate; leaflets stalked, toothed or deeply cut. Flowers mostly white.—There are 4 South African species, found eastward from Swellendam to Port Natal.

##### 2. *THALICTRUM*, Tourn.

Sepals 4-5, coloured, imbricate in bud, soon falling. Petals none. Carpels 4-5, 1-seeded, dry, shortly beaked.—*Fl. Cap.* i. p. 3.

Herbs. Stems erect, branched, leafy. Leaves alternate, 3-4-pinnate; leaflets stalked, toothed or lobed. Flowers paniced, small, yellowish or greenish; stamens conspicuous.—2 South African species; found on mountains in the eastern districts, Caffraria, and Natal.

##### 3. *ANEMONE*, Hall.

Involucre 2-3-leaved, below the flower. Sepals many, co-

loured, imbricate, soon falling. Petals none. Carpels very many in a tuft, dry, 1-seeded, with hairy tails.—*Fl. Cap. i. p. 3*; *Thes. Cap. t. 7*.

Herbs. Leaves from the rootstock, stalked, lobed or cut, sometimes very much divided. Peduncles simple or branched, 1- or few-flowered. Flowers white or rosy, conspicuous.—3 South African species: *A. Capensis*, from Table Mountain to Swellendam; *A. Caffra*, in the Eastern districts and Caffraria; *A. Fanninii*, n. sp., at the Dargle Farm, Natal.

#### 4. **KNOWLTONIA**, Salisb.

Involucre none. Sepals 5, green, imbricate, falling. Petals 5–15, whitish yellowish or greenish, flat, with naked claws. Carpels many in a tuft, 1-seeded, when ripe fleshy; style falling off.—*Fl. Cap. i. p. 4*.

Herbs, with very acrid juice. Leaves from the rootstock, stalked, 3-parted or twice 3-parted; leaflet stalked, toothed or cut. Flowers in branching cymes or umbels, dull-coloured.—An endemic genus, consisting of 5, perhaps 6 (*K. bracteata*, mss., n. sp.) species, dispersed through the colony.

#### 5. **RANUNCULUS**, Hall.

Sepals 3–5, green or yellowish, imbricate, falling. Petals 5–10, flat, yellow or white, with a minute fleshy scale or pit near the base on the inside. Carpels many, tufted, 1-seeded, dry in fruit, pointed or beaked.—*Fl. Cap. i. p. 5*.

Herbs. Stems weak, leafy. Leaves stalked, deeply cut, lobed or multifid in our species.—6 South African species, dispersed: 5 with yellow flowers are terrestrial; 1 (*R. aquatilis*), with white flowers, grows in ponds and rivers.

### ORDER II. **ANONACEÆ**.

Flowers bisexual. Sepals 3, valvate. Petals 6, in two rows. Stamens many, hypogynous; filaments thickened upwards; anthers fixed. Carpels several, separate or cohering.—Trees or shrubs. Leaves simple, entire, alternate, without stipules. Flowers leathery, lateral, on short stalks.

Carpels separate, on short pedicels.

|  |                     |
|--|---------------------|
| Petals imbricate. Ovules many . . . . .              | 1. <b>UVARIA</b> .  |
| Petals valvate. Ovules 1–2, erect . . . . .          | 2. <b>POPOWIA</b> . |
| Carpels confluent into a many-seeded fruit . . . . . | 3. <b>ANONA</b> .   |

#### 1. **UVARIA**, Linn.

Petals 6, imbricate in two rows, plano-convex. Stamens very many, compressed, with a prolonged connective. Torus little-raised, hairy. Carpels oblong, furrowed on the inner face; style continuous; ovules many, in two rows. Berries many- or 1-seeded.—*Fl. Cap. i. p. 8*.

1 South African species: *U. Caffra*, E. Mey., from Natal; a climbing shrub, with laurel-like leaves, 2-5 inches long, 1-2½ inches wide. Flowers solitary, lateral, nodding. Petals downy. Berry as large as a cherry.

## 2. POPOWIA, Endl.

Petals 6, valvate in two rows, short, broadly ovate, concave, not spreading. Stamens many, wedge-shaped, with a prolonged connective. Torus little raised. Carpels 5 or many; style capitate; ovules 1-2, erect. Berries globose or egg-shaped, stalked.—*Benth. and Hook. Gen. Pl. i. p. 25.* Guatteria, *Fl. Cap. i. p. 9.*

*P. Caffra*, H. and S. (*Guatteria Caffra*, Sond.!), from Natal, is a climbing shrub, 10-20 feet high, hanging in festoons from the branches of trees. Leaves oblong, 3-4 inches long, pale or livid beneath. Flowers 2-4 together, on short stalks, cream-coloured.

## 3. ANONA, Linn.

Petals mostly 6, valvate in two rows, the outer fleshy, concave, scarcely spreading, inner smaller, rarely wanting. Stamens many, with a prolonged ovate connective. Torus hemispherical. Carpels many, mostly connate; style oblong; ovules solitary. Berries fleshy, obtuse, confluent into a many-celled fruit.—*Benth. and Hook. Gen. Pl. i. p. 27.*

*A. Senegalensis*, Pers., a shrub 6-12 feet high, is found near Natal. Leaves ovate, feather-nerved and netted-veined beneath, pubescent. Fruit edible, 1½-2 inches diameter, "well-flavoured" (*W. T. Gerrard*).

## ORDER III. MENISPERMACEÆ.

Flowers minute, unisexual, green. Stamens definite (few), mostly monadelphous; filaments short; anthers fixed. Carpels 1-3, separate; ovules solitary. Fruit of fleshy, oblique, very small drupes.—Slender climbing half-shrubs, with alternate, simple, netted-veined leaves. Flowers in axillary cymes racemes or umbels.

Female flowers with 3-5 petals and 3-5 sepals; style

- |   |                 |
|---|-----------------|
| 3-fid . . . . .   | 1. STEPHANIA.   |
| Female flowers with 1 petal and 1 sepal; style 3-fid . . . . .  | 2. CISSAMPELOS. |
| Female flowers with 2 petals and 2 sepals; style none . . . . . | 3. ANTIZOMA.    |

### 1. STEPHANIA, Lour.

Flowers diœcious. Male: Sepals 6-10, in two rows. Petals 3-5, shorter than the sepals, obovate, rather fleshy. Staminal column peltate at the apex; anthers sessile, in a marginal ring. Female: Sepals 3-5. Petals as in the male flower. Carpel 1; style 3-parted. Drupe compressed, dor-

sally tubercled, hollowed on both sides.—*Benth. and Hook. Gen. Pl. p. 37.* *Homocnemia, Fl. Cap. i. p. 10.*

A single species, *Homocnemia Meyeriana*, Miers, from Natal. A vine-like twiner, with peltate, ovate-orbicular, many-nerved, pubescent leaves. Flowers in umbels.

## 2. CISSAMPELOS, Linn.

Flowers diœcious. Male: Sepals 4, separate. Corolla cup-shaped, nearly entire, shorter than the sepals (composed of 4 confluent petals). Staminal column peltate at the apex; anthers 4–12, sessile in a marginal ring. Female: Sepal 1, anterior. Petal 1 (or 2 confluent) in front of the sepal, clasping the ovary. Carpel 1; style 3-fid. Drupe kidney-shaped; nut compressed and wrinkled at edges.—*Fl. Cap. i. p. 10.*

Mostly twining, slender, shrubby plants. Leaves simple, petioled, entire, ovate reniform or cordate, often peltate. Male flower in cymes; female racemose, densely tufted in the axils of leafy bracts.—3 Cape species, 2 of which are confined to the Eastern district and Natal.

## 3. ANTIZOMA, Miers.

Flowers diœcious. Male flower as in *Cissampelos*. Female: Sepals 2, opposite, very concave, fleshy, slightly imbricate in bud. Petals 2, opposite the sepals, minute, scale-like, orbicular, fleshy, hypogynous. Carpel 1, obovate; style none; stigma obsolete or bluntly 2-lobed. Fruit unknown.—*Fl. Cap. i. p. 11.*

Endemic. Suberect or twining shrubs. Leaves linear or lanceolate, entire, opaque, leathery, on very short petioles; the petiole armed at base with a dorsal spur-like spine.—5 reputed species (probably over-estimated), from the Northern and North-Eastern frontiers.

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# ORDER IV. NYMPHÆACEÆ.

Flowers bisexual, large and showy. Petals numerous, in several rows. Stamens many; filaments flat; anthers adnate. Carpels numerous, sunk in a fleshy torus, and thus concreted into a many-celled ovary.—“Water-lilies.” Leaves on long stalks, cordate or peltate.

## 1. NYMPHÆA, Linn.

Sepals 4, at the base of the fleshy torus, in which the carpels are sunk. Petals and stamens numerous, in several rows, covering the sides of the torus. Ovary many-celled; stigmas sessile, radiating. Berry leather-coated, irregularly bursting; seeds many, lodged in pulp.

Water-plants, with submerged prostrate rootstocks, throwing up leaves

and flowers. Leaves on long, terete petioles, cordate. Flowers on simple peduncles.—1 South African species, *N. stellata*, with blue or rarely white, sweet-scented flowers, standing out of the water. It is found in rivers and ponds throughout South Africa.

## ORDER V. PAPAVERACEÆ.

Flowers bisexual. Sepals 2-3, deciduous. Petals 4-6, equal, spreading, crumpled in the bud. Stamens many; filaments slender; anthers adnate. Ovary 1-celled, with 2 or several parietal placentæ; ovules many. Capsule many-seeded.—The Poppy family. Herbs, with coloured, narcotic juices.

### 1. PAPAVER, Linn.

Ovary globose or obovoid, crowned with 4-20 radiating, linear, sessile stigmas. Capsule oblong, dry, opening by small pores under the stigmas; placentæ projecting into the cavity, and dividing it into several incomplete chambers. Seeds very numerous.—*Fl. Cap.* i. p. 15.

1 South African species, *P. aculeatum*, Th.; the Wild Poppy. Radical leaves many, sinuous or pinnatifid, setose and bristly; stem-leaves sessile, very hispid. Flowers scarlet-orange, on long peduncles.—Native of the Northern and Eastern districts. *P. horridum*, DC., from Australia, is a synonym of this species.

## ORDER VI. FUMARIACEÆ.

Flowers bisexual. Sepals 2, minute, scale-like. Petals 4, unequal, connivent in pairs, one or both of the outer pair spurred or saccate at base. Stamens 6, diadelphous, 3 in each parcel.—Glabrous, often glaucous, twining herbs, with much-divided leaves, and small, purple white or yellow, racemose flowers.

Fruit many-seeded, capsular.

Capsule bladder-like, subglobose . . . . . 1. CYSTICAPNOS.

Capsule lanceolate, compressed . . . . . 2. CORYDALIS.

Fruit 1-seeded, indehiscent.

Fruit flattened, orbicular . . . . . 3. DISCOCAPNOS.

Fruit subglobose, not flattened . . . . . 4. FUMARIA.

### 1. CYSTICAPNOS, Boerh.

Capsule 2-valved, bladdery; epicarp inflated, spongy within; endocarp delicately membranous, supported by slender filaments in the centre of the cavity, and bearing at the margins of the valves many-seeded placentæ. Seeds compressed, beaked.—*Fl. Cap.* i. p. 16.



Endemic. *C. Africana*, the only species, is frequent near Capetown; also at Stellenbosch and Swellendam. Its bladderly capsules are 1 inch in diameter, pointed, and splitting into two boat-like valves.

## 2. CORYDALIS, DC.

Capsule pod-shaped, compressed, 1-celled, 2-valved; valves separating from a persistent, placentiferous replum (or frame). Seeds lenticular, beaked.—*Fl. Cap.* i. p. 16.

3 South African species, all annuals, with climbing stems and multifid leaves.

## 3. DISCOCAPNOS, Ch. and Schl.

Fruit (a utricle) orbicular, flattened, membranous, with a marginal wing, indehiscent, 1-seeded. Seed lenticular, beaked.—*Fl. Cap.* i. p. 18; *Thes. Cap.* t. 10.

Endemic. *D. Mundtii*, the only species, is found near Capetown, etc. It is like the common "Fumitory," but differs in its flattened fruit.

## 4. FUMARIA, Linn.

Fruit subglobose (not flattened), dry, indehiscent, 1-seeded.

*F. officinalis*, L., the common "Fumitory," is a weed of cultivation, introduced from Europe. Grows in waste places and old gardens.

# ORDER VII. CRUCIFERÆ.

Flowers bisexual. Sepals 4, deciduous. Petals 4, clawed, mostly equal, spreading in the form of a cross. Stamens 6, 4 long and 2 short; anthers versatile. Ovary 2-celled, with parietal placentæ. Fruit a long pod (*siliqua*) or a short one (*silicula*). Seeds without albumen.—Herbs or shrublets, with alternate leaves and no stipules. Flowers in racemes, white yellow purple or sky-blue.—Many garden vegetables, such as Cabbage, Turnips, Mustard, Cress, Radishes, Horseradish etc., and garden flowers, such as Stocks, Wallflowers, etc., belong to this Order.

A. SILIQUOSÆ. Fruit-pod several times as long as broad.

\* Pod with flat or flattish valves.

Calyx equal at base (not spurred).

Seeds with flat, accumbent cotyledons (0=).

Pod linear-elongate, narrow; valves not elastic . . . . . 4. ARABIS.

Pod acute at each end; valves bursting with elasticity . . . . . 5. CARDAMINE.

Seeds with long, twice-folded cotyledons (0|||).

Pod linear or beaded . . . . . 13. HELIOPHILA.

Calyx 2-spurred at base . . . . . 12. CHAMIRA.

\*\* Pod 2-edged or 4-angled, with keeled valves . . 3. BARBAREA.

\*\*\* Pod with convex, round-backed valves.

Pod dehiscent when ripe.

Seeds with flat accumbent cotyledons (0=).

Sepals elongate, erect, saccate at base . . . 1. MATTHIOLA.

Sepals spreading, equal at base . . . 2. NASTURTIIUM.

Seeds with flat incumbent cotyledons (0 ||) 7. SISYMBRIUM.

Seeds with broad cotyledons folded over

the radicle (0 > >) . . . 11. BRASSICA.

Pod indehiscent; seeds as in *Heliophila* . 14. CARPONEMA.

B. SILICULOSÆ. Fruit-pod short, few- or 1-seeded,  
less than thrice as long as broad.

\* Pod dehiscent.

Pod with flattish valves and a broad septum.

Cotyledons accumbent (0=) . . . 6. ALYSSUM.

Cotyledons elongate, twice folded on the

radicle (0 || || ||) . . . 13. HELIOPHILA.

Pod with keeled valves and a narrow septum.

Seeds 1 in each cell . . . 9. LEPIDIUM.

Seeds several in each cell . . . 10. CAPSELLA.

\*\* Pod indehiscent; seeds solitary.

Pod deeply 2-lobed or 2-parted.

Petals minute, shorter than the sepals . . 8. SENEBIERA.

Petals much longer than the sepals . . 15. BRACHYCARPEA.

Pod orbicular or ovate.

Pod ovate, beaked, with convex, wrinkled

valves . . . 16. CYCLOPTYCHIS.

Pod orbicular, with flat valves . . . 17. PALMSTRUCKIA.

### 1. MATTHIOLA, R. Br.

Sepals erect, the 2 lateral saccate at base. Pod subterete, elongate, with round-backed valves. Stigma thickened, its lobes erect, connivent. Seeds compressed, 1-seriate; cotyledons accumbent.—*Fl. Cap.* i. p. 20.

1 South African species: *M. torulosa*, a rigid, branching, tomentose herb, with stellate pubescence; radicle-leaves subsinuate. Flower purplish.—Northern districts and frontier.

### 2. NASTURTIIUM, R. Br.

Sepals spreading, equal at base. Pod nearly cylindrical, long or short, with round-backed valves. Styles short or longish; stigma 2-lobed. Seeds small, turgid, 2-seriate; cotyledons accumbent.—*Fl. Cap.* i. p. 21.

Water or marsh plants.—2 South African species: *N. officinale* (common Watercress), with white flower; *N. fluviatile*, E. M., with yellow flower; the latter an Eastern district plant.

### 3. BARBAREA, R. Br.

Sepals erect, equal at base. Pod 4-sided, 2-edged, the valves keeled at back, awnless at the apex. Stigma capitate. Seeds not margined, 1-seriate.—*Fl. Cap.* i. p. 22.

1 species : *B. præcox*, R. Br., a roadside weed, introduced from Europe. Stem branching ; lobes lyrate-pinnatifid ; flower small, bright yellow.

#### 4. ARABIS, Linn.

Sepals erect or spreading, equal, or the lateral saccate at base. Pod linear, compressed, with flat valves. Seeds in a single or double row.—*Fl. Cap.* i. p. 22. Also *Turritis*, L. ; *Fl. Cap.* l. c.

2 South African species, found on high mountains of the Eastern district. Flowers white.

#### 5. CARDAMINE, Linn.

Sepals erect or spreading, equal at base. Pod linear or sub-lanceolate, mostly acute at each end ; valves flat, nerveless, opening with elasticity. Seeds ovate, not margined, 1-seriate.—*Fl. Cap.* i. p. 23.

1 South African species : *C. Africana*, found in damp woods throughout the colony. Lobes on long petioles, 3-partite ; the leaflets petiolate, ovate-acuminate, toothed. Flowers small, white.

#### 6. ALYSSUM, Linn.

Sepals erect, equal at base. Petals entire. Stamens toothed or entire. Pod orbicular or elliptical, the valves flat or convex in the centre. Seeds 1-4 in each cell, compressed, sometimes margined ; cotyledons accumbent.—*Fl. Cap.* i. p. 23.

Small annuals or perennials, covered with whitish stellate pubescence. Leaves entire. Flowers white or yellow.—2 South African species.

#### 7. SISYMBRIUM, All.

Sepals spreading, equal at base. Filament toothless. Pod subterete, sessile ; valves convex, usually 3-nerved. Seeds several, ovate or oblong ; cotyledons incumbent or oblique.—*Fl. Cap.* i. p. 24.

Roadside weeds or weed-like plants, glabrous or hispid. Leaves either simple, pinnatisect or decompound. Flowers mostly yellow, rarely white.—8 reputed South African species.

#### 8. SENEBIERA, DC.

Sepals spreading. Petals very small. Stamens 2-4-6. Pod 2-parted, subcompressed, indehiscent ; valves subglobose, ridged or crested. Seeds solitary.—*Fl. Cap.* i. p. 27.

Littoral or roadside weeds, widely dispersed over the globe, decumbent or prostrate. Leaves entire or mostly pinnatifid. Flowers very minute, in short racemes opposite the leaves. Smell very pungent.—4 South African species.

9. **LEPIDIUM**, Linn.

Sepals equal at base. Pod ovate or subcordate; the valves keeled; cells 1-seeded. Seeds 3-cornered or compressed.—*Fl. Cap.* i. p. 28.

The garden Cress (*L. sativum*) is the type of this widely-dispersed genus. Sonder enumerates 10 species in *Fl. Cap.* These are weed-like plants, with entire or variously and irregularly-cut leaves and small flowers in terminal elongating racemes.

10. **CAPSELLA**, Vent.

Sepals flattish, equal at base. Pod triangular or wedge-shaped, the valves boat-shaped, wingless; cells many-seeded.—*Fl. Cap.* i. p. 31.

1 species, Shepherd's-purse, a common weed throughout the temperate zones; introduced from Europe.

11. **BRASSICA**, Linn.

Sepals erect or spreading, the lateral often saccate at base. Filament toothless. Pod long, subterete, with a beak (sometimes indehiscent and 1-seeded); the valves convex, 1-3-nerved, the lateral nerves often flexuous; septum membranous or spongy. Seeds 1-seriate, subglobose or oblong; cotyledons broad, conduplicate ( $0 > >$ ).—*Fl. Cap.* i. p. 3. Also *Sinapis*, Koch; *Fl. Cap.* i. p. 32.

Cabbage, Turnip, Mustard, etc. Mostly biennials, natives of the temperate zones. Lower leaves petioled, lyrate or pinnatifid; cauline sessile, subentire. Racemes elongate; flowers yellow.—4 South African species.

12. **CHAMIRA**, Thunb.

Calyx 2-spurred at base. Pod substipitate, oblong, compressed, with a subulate beak. Seeds compressed, immarginate; cotyledons elongate, twice folded on the radicle.—*Fl. Cap.* i. p. 32.

Endemic. *C. cornuta*, the only species, is a weakly, glabrous annual. Lower leaves opposite, reniform-cordate, 2 inches long, 3-4 inches wide; upper alternate deeply cordate, the uppermost acuminate. Flowers small, white.—About Simon's Town and near Saldanha Bay.

13. **HELIOPHILA**, Linn.

Sepals equal at base. Filaments of lateral stamens simple, or with a tooth near the base. Pod sessile or stipitate, dehiscent, long or short, compressed, linear, oblong or lanceolate, the margins straight or undulate; valves 1-3-nerved, flattish, mostly membranous; septum hyaline; style short or long; stigma 2-lobed. Seeds many or few, sometimes solitary, 1-2-seriate;

cotyledons twice folded on the radicle.—*Fl. Cap.* i. p. 35 ; *Thes. Cap.* t. 166.

A large woolly South African genus of upwards of sixty species. These are distributed under the following sections:—

1. LEPTORMUS. Pods linear, moniliform ; the beads oval. Herbs.
2. ORMISCUS. Pods linear, moniliform ; beads globose. Herbs.
3. SELENOCARPÆÆ. Pods oval or suborbicular. Herbs.
4. ORTHOSELIS. Pods linear, with straight or straightish margins. Herbs or shrublets.
5. PACHYSTYLUM. Pods linear ; style short and thick. Pubescent half-shrubs.
6. LANCEOLARIA. Pods lanceolate. Glabrous shrublets and half-shrubs.

#### 14. CARPONEMA, Sond.

Pod sessile, indehiscent, linear, terete, tapering to each end, somewhat constricted between the seeds, with a very thin septum, 2-celled, one cell smaller and empty, the other several-seeded ; valves hardened, nerveless ; style conical. Seeds in a single row, oblong, terete, immarginate, separated by cross-partitions ; cotyledons twice folded on the radicle.—*Fl. Cap.* i. p. 35.

Endemic. 1 species, *C. filiforme*, Sond., a glabrous or pilose annual, 12–18 inches high. Leaves linear, the lower long ; racemes long ; flowers blue or purple ; pods pendulous, 1 inch long.—Found on the Cape flats.

#### 15. BRACHYCARPÆA, DC.

Sepals equal at base. Pod indehiscent, deeply 2-lobed, with a very narrow septum ; valve very convex, netted and ridged ; cells 1-seeded. Seeds with long, linear cotyledons, spirally rolled on the radicle.—*Fl. Cap.* i. p. 33.

An endemic genus of 2 species, natives of the West and North-West districts. Glabrous, half-shrubby perennials, with oblong or linear entire leaves ; long leafless racemes, and handsome yellow or purple flower.

#### 16. CYCLOPTYCHIS, E. Mey.

Pod hard-shelled, indehiscent, orbicular-ovate, beaked ; septum orbicular ; valves somewhat convex, with raised ridges, radiating from a prominent keeled centre ; seeds solitary in each centre ; cotyledons long, linear, twice folded on the radicle.—*Fl. Cap.* i. p. 34 ; *Thes. Cap.* t. 59.

An endemic genus of 2 species, natives of the Western districts. They resemble *Brachycarpæa* in aspect, but differ in fruit.

#### 17. PALMSTRUCKIA, Sond.

Pod sessile, orbicular, very much flattened, indehiscent, 1-locular, 1-seeded. Seeds orbicular, compressed, with a membranous marginal wing ; cotyledons linear, incumbent, twice-folded.



Endemic. A glabrous, erect herb, with remote, linear-filiform leaves. Flowers unknown. Fruiting racemes long; ripe pods 7-8 lines long and wide, rounded at top, with a very short style; valves flattish, nerveless. —This plant was found by Thunberg, about 1772, on the Onderste Roggeveld; no more recent collector has met with it!

## ORDER VIII. CAPPARIDEÆ.

Flowers bisexual. Sepals 4. Petals 4-8 or more, clawed, often unequal, sometimes none. Stamens 4, 6, or many, not tetradynamous. Ovary 1-locular, with 2 parietal placentæ. Fruit a dry capsule or fleshy berry. Seeds without albumen; embryo curved or spirally rolled. —Trees shrubs or herbs, with alternate simple or compound leaves. Pubescence often glandular and fetid.

Tribe 1. CLEOMEÆ. Fruit a dry, dehiscent, pod-like capsule. Annual or perennial herbs; leaves simple or compound. (Gen. 1-2.)

Torus small, depressed or inconspicuous. . . . . 1. CLEOME.

Torus tapering into a stalk-like gynophore. . . . . 2. GYNANDROPSIS.

Tribe 2. CAPPARÆÆ. Fruit a fleshy, indehiscent berry. Shrubs or trees. (Gen. 3-6.)

Calyx-tube obconical, persistent; limb of 4 deciduous valvate lobes; torus elongate, filiform.

Berry ovoid, 1-celled, few- or many-seeded. . . . . 3. NIEBUHRIA.

Berry cylindrical, torulose, transversely many-celled, each cell 1-seeded. . . . . 4. MÆRUA.

Calyx of 4 deciduous separate sepals, not united into a tube at base.

Torus long, slender, filiform. Stamens 4-8. . . . . 5. CADABA.

Torus short, hemispherical. Stamens few or many. . . . . 6. CAPPARIS.

### TRIBE 1. CLEOMEÆ. (Gen. 1-2.)

#### 1. CLEOME, Linn.

Calyx 4-toothed or 4-parted, persistent or deciduous. Petals equal or unequal, sessile or clawed, entire; convolute imbricate or open in the bud. Torus short or depressed, sometimes produced behind into a process or gland. Stamens 4-6-8 or more, either all perfect or some sterile, very generally unequal and declinate, the filaments often thickened under the apex. Ovary sessile or stipitate; ovules many; style none or elongate. Capsule mostly elongate, sometimes inflated, 1-celled, with thin valves. —*Fl. Cap.* i. p. 55. *Also* Polanisia, *Rafin. Fl. Cap.* i. p. 56. *Dianthera*, *Kl.*; *Fl. Cap.* i. p. 57; *Thes. Cap.* t. 136. *Tetratelia*, *Sond.*; *Fl. Cap.* i. p. 58.

A large tropical and subtropical genus of herbs or half-shrubs, mostly strongly scented. Leaves simple or compound. The following subgenera are represented in the South African flora:—

1. EUCLEOME. Stamens 6, fertile. (2 species.)

2. **POLANISIA**. Stamens 8-12, fertile. (2 species.)

3. **DIANTHERA**. Stamens 4-10; 2-8 short and sterile; 2 anterior alone fertile, very long, declinate. (3 species.)

4. **TETRATELIA**. Stamens 8; 4 sterile, short; 4 fertile, elongate. (1 species.)

All the Cape species are natives of the Northern or North-Eastern frontier, or of the regions beyond the Northern boundary.

## 2. **GYNANDROPSIS**, DC.

Sepals 4, short, spreading. Petals 4, clawed. Stamens 6, inserted on the summit of a long stalk-like torus; filaments subequal; anthers 2-celled, fertile. Ovary stipitate; ovules many; stigma subsessile. Capsule pod-like, 1-celled, 2-valved, many-seeded. Seeds rugose.—*Fl. Cap. i. p. 55*.

Annuals, chiefly tropical. *G. pentaphylla* is found on the Asbestos Mountains and Magalisberg; it is a native of the West Indies, but now naturalized throughout the tropics generally.

## TRIBE 2. CAPPARÆ. (Gen. 3-6.)

### 3. **NIEBUHRIA**, DC.

Calyx with a funnel-shaped, persistent tube, and a 4-parted, deciduous limb; lobes valvate in æstivation. Petals 0 or very small. Torus filiform, long or shorter, cylindrical. Stamens many, on the apex of the torus; filaments filiform. Ovary on a long stipe, 1-celled; ovules many or few. Berry ovoid or subglobose, 1-celled, many- or few-seeded.—*Niebuhr*, *Fl. Cap. i. p. 60*; and *Boscia*, *Fl. Cap. l. c.*; *Thes. Cap. t. 134*.

Small trees or shrubs, glabrous or pubescent. Leaves 3-foliolate or simple. Flowers terminal or axillary, solitary or corymbose.—5 South African species, of which 3 have 3-foliolate, and 2 simple leaves. 4 are natives of the Eastern district, or Natal; 1 (*Boscia angustifolia*, H.) of Namaqualand.

### 4. **MÆRUA**, Forsk.

Calyx with a funnel-shaped, persistent tube, and a 4-parted, deciduous limb; lobes valvate. Petals 0, or 4 in the throat of the calyx. Torus filiform, elongate, cylindrical. Stamens many, inserted in the middle of the torus; filaments free or connate at base. Ovary on a long stipe; ovules many; stigma subsessile. Berry cylindrical, torulose, transversely many-celled; cells 1-seeded.

Trees, chiefly tropical, often glaucous. Leaves simple, quite entire. Flowers axillary or terminal.—*M. Angolensis* has been recently found in the Natal country by Mr. Gerrard (*Gerr. and M.K. ! 1148*).

### 5. **CADABA**, Forsk.

Sepals 4, separate, unequal, deciduous, concave, the two outer valvate in the bud and covering over the 2 inner. Petals

(2-4 or) none. Stamens 4-8, fertile, inserted on the apex of a long, filiform torus, which has a hood- or bottle-shaped appendage at its base, on the upper side. Ovary stipitate, oblong, 1-locular; ovules many; stigma sessile. Berry cylindrical, fleshy and indehiscent, or leathery, splitting irregularly.—*Fl. Cap.* i. p. 59; and *Schepperia*, *Fl. Cap.* l. c.; *Thes. Cap.* t. 60 and t. 135.

Shrubs, glabrous or glandular, sometimes leafless. Leaves simple or 3-foliolate. Flowers axillary, solitary or racemose.—2 South African species: *C. juncea* (*Schepperia juncea*, DC.), a native of dry plains in the Northern, North-Western, and Eastern districts; and *C. Natalensis*, Sd., found in Natal and British Caffraria.

### 6. CAPPARIS, Linn.

Sepals 4-5, free or connate at base, valvate or imbricate. Petals 4, rarely more, imbricated. Torus small, hemispherical. Stamens mostly numerous, sometimes 8, on the torus; filaments free. Ovary stipitate; ovules many; stigmas sessile. Berry on a long stipe, globose or cylindrical, many- or few-seeded. Seeds lying in pulp; embryo spirally rolled.—*Fl. Cap.* i. p. 61.

Trees or shrubs, often climbing or scrambling, unarmed or spiny. Leaves simple.—9 Cape species, all Eastern or from Natal.

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## ORDER IX. RESEDACEÆ.

Flowers bisexual, small, green or white. Sepals several, persistent. Petals minute. Stamens 3 or several. Ovary 1-celled, open at the summit, with 3-4 parietal placentæ. Fruit a gaping capsule. Seeds without albumen; embryo curved.—Small herbs or suffrutices, with alternate, simple or cut leaves. “Mignonette” belongs to this Order.

### 1. OLIGOMERIS, Cambess.

Calyx 4-5-parted, the segments sometimes unequal. Petals 2, alternate with the upper sepals, flat, simple (not lobed), without appendage, separate or connate at base. Torus obsolete. Stamens 3-8, hypogynous; filaments subulate, flat, united at base into a cup, persistent; anthers deciduous. Ovary 1-celled, 4-angled, with 4 conical points; placentæ 4, parietal; ovules many. Capsule membranous, inflated, open at the summit, 4-horned.—*Fl. Cap.* i. p. 64.

Small, slightly fleshy perennials; leaves very narrow, undivided; flowers minute, white, in terminal, bracteate spikes.—4 species, found on dry hills in various parts of the colony.

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## ORDER X. BIXACEÆ, Endl.

Flowers small, often unisexual, regular. Sepals often

united at base, persistent; sometimes partly adnate to the ovary. Petals sometimes wanting, rarely large. Stamens definite or indefinite, hypogynous or rarely perigynous. Ovary 1-locular, with parietal placentæ. Fruit either a fleshy berry, or a pulpy, dehiscent capsule. Seed albuminous; embryo straight, central.—Trees or shrubs, with alternate, simple leaves; often spiny.

Suborder 1. BIXINÆ. Ovary quite free. Stamens hypogynous. (Gen. 1-7.)

Flowers bisexual or polygamous. Style columnar or short.

- |   |              |
|---|--------------|
| Sepals deciduous. Petals 10-12, much larger than the sepals . . . . . | 1. ONCOBA.   |
| Sepals 4-5, persistent. Petals 4-5, small, deciduous                  | 2. RAWSONIA. |
| Calyx persistent, deeply 10-12-fid in 2 rows; petals none . . . . .   | 3. SCOLOPIA. |

|   |             |
|---|-------------|
| Flowers unisexual, dioecious. Stigma subsessile. Ovule solitary . . . . . | 4. XYLOSMA? |
|---|-------------|

Flowers unisexual, dioecious. Styles as many as the carpels.

- |  |                |
|--|----------------|
| Anthers opening by slits. Petals 0.                                |                |
| Calyx 6-10-fid in a double row; capsule . . . . .                  | 5. TRIMERIA.   |
| Calyx 5-7-fid in a single row; berry . . . . .                     | 6. DOVYALIS.   |
| Anthers opening by pores. Petals 5, with a scale at base . . . . . | 7. KIGGELARIA. |

Suborder 2. HOMALINÆ. Flowers bisexual. Ovary half-inferior.

Stamens perigynous. (Gen. 8.)

- |   |              |
|---|--------------|
| Calyx with a conical, adherent tube, and a 10-30-fid limb; the segments in two rows . . . . . | 8. HOMALIUM. |
|---|--------------|

## SUBORDER 1. BIXINÆ. (Gen. 1-7.)

### 1. ONCOBA, Forsk.

Flowers polygamous. Sepals 3-5, deciduous, imbricated. Petals 6-12, much larger than the sepals, obovate, clawed, imbricate. Stamens many, inserted in several rows on a fleshy torus; filaments filiform; anthers linear or oblong, erect, opening by slits. Ovary with 3-10 parietal placentæ; style simple; stigma radiate; ovules many. Berry leathery, pulpy within; seeds numerous.—*Fl. Cap.* i. p. 66.

Trees or shrubs, glabrous or pubescent, sometimes spinous. Leaves simple, entire or serrulate. Flowers terminal, large, white or yellow.—3 South African species; 2 found at Natal, 1 at Delagoa Bay.

### 2. RAWSONIA, Harv. and Sond.

Flowers perfect or polygamous. Sepals 4-5, very unequal, concave, imbricate, persistent. Petals 4-5, unequal and concave like the sepals and not longer, deciduous. Petaloid scales (*staminodia*) opposite the petals and longer, each with a 2-lobed, fleshy gland at base. Stamens many, in several

rows, the inner hypogynous, the outer attached to the base of the petaloid scales; anthers sagittate, erect. Ovary on a convex torus, with 4-5 parietal placentas; ovules many; stigma subsessile, 4-5-parted. Fruit . . .?—*Fl. Cap.* i. p. 67.

*R. lucida* is a Natal shrub, with glossy, exstipulate, serrate leaves, and axillary, subcapitate spikes of (yellow?) flowers.

### 3. SCOLOPIA, Schreb.

Flowers bisexual. Calyx persistent, with a short, conical tube, and a 10-12-parted limb; the segments in two rows, the inner smaller. Torus fleshy, filling the calyx-tube, its margin, opposite the bases of the outer calyx-segments cut into numerous, glandular lobules. Stamens very many, in several rows within the margin of the disk, slightly perigynous; filaments capillary; anthers 2-celled, acuminate or horned, splitting. Ovary free, sessile, with 2 inflexed placentæ; ovules few; style filiform; stigma subcapitate. Berry fleshy, few-seeded.—*Phoberos, Lour.; Fl. Cap.* i. p. 67.

Shrubs or small trees, often spiny.—3 species found in the Eastern district; others recently at Natal.

### 4. XYLOSMA, Forst.

Flowers diœcious. Male: Sepals 4-5, scale-like, often ciliate, imbricate. Petals 0. Stamens many, often surrounded by a glandular disk; anthers short, versatile, splitting. Female: Ovary on an annular disk; placentæ parietal, 1 (or 2-3-6); ovule solitary (or few); style none (or entire or divided); stigma dilated. Berry indehiscent, small, 1-(or few-)seeded.—*Thes. Cap.*

Trees, often spiny. Leaves toothed, rarely entire. Flowers shortly racemose or tufted in the axils of the leaves, minute. *X. monospora*, Harv., recently found near Natal by Mr. Cooper.

### 5. TRIMERIA, Harv.

Flowers diœcious. Male: Calyx 6-10-parted in a double row, the inner larger. Disk bearing marginal glands opposite each of the outer lobes of the calyx. Petals 0. Stamens 9-10, subperigynous, inserted in parcels of 3-4, alternating with the glands of the disk. Female: Calyx as in the male, but without glands. Ovary free, sessile, with 3 parietal placentæ; styles 3, short, persistent; ovules 1-2 on each placenta. Capsule dry, 3-valved, 1-3-seeded.—*Fl. Cap.* i. p. 68.

Shrubs or trees. Leaves alternate, 3- or many-nerved, toothed. Flowers minute, spiked or paniced.—2 species, from Eastern frontier and Natal.



## 6. DOVYALIS, E. Mey.

Flowers diœcious. Male: Sepals 5-8, tomentose, scarcely imbricate. Petals none. Stamens 12-20 or many, inserted on a fleshy, glandular disk; filaments filiform; anthers didymous, short. Female: Ovary seated on a lobed, fleshy disk, with 2-6 or more, strongly inflexed placentæ; ovules solitary or few, pendulous; styles as many as the placentæ, spreading. Berry indehiscent, pulpy within, few-seeded. Seeds glabrous or woolly.—*Fl. Cap.* i. p. 69. *Also Aberia, Fl. Cap.* i. p. 70, and ii. (*Suppl.*) p. 584.

Shrubs or small trees, often spiny. Leaves simple, entire or toothed, alternate. Flowers axillary, small; the males tufted, females solitary. There are two sections or *subgenera*, viz. :—

1. DOVYALIS, E. M. Seeds glabrous. (2 species.)

2. ABERIA, Hochst. Seeds woolly. (4 species.)

In the 'Flora' I retained *Aberia* as distinct from *Dovyalis*, but the recent discovery of two new species with intermediate characters, has induced me to unite them. One of these, the "Kei apple" (*Aberia Caffra*, Hook. f. and Harv.), has 6 (or probably more) styles and placentæ. There is absolutely no difference whatever in *habit* between the species of the two subgenera.

## 7. KIGGELARIA, Linn.

Flowers diœcious. Calyx 5-parted, deciduous; sepals valvate in bud. Petals 5, imbricate, leathery, each with a fleshy gland at its base inside. Male: Stamens 10, crowded in the base of the calyx; filaments short; anthers hard and dry, 2-celled, opening by terminal pores. Female: Ovary sessile, with 2-5 parietal placentæ; styles 2-5, short; ovules many. Capsule globose, pubescent, leathery, several-seeded, bursting imperfectly into 2-5 valves.—*Fl. Cap.* i. p. 71.

Endemic shrubs or small trees. Leaves simple, entire or denticulate. Male flowers in axillary cymes; female solitary.—3 species.

## SUBORDER 2. HOMALINEÆ.\* (Gen. 8.)

## 8. HOMALIUM, Jacq.

Flowers bisexual. Calyx persistent, with a conical tube and multipartite (10-30-cleft) limb; segments in two rows, the inner ones largest. A gland opposite the base of each of the outer segments. Stamens perigynous, alternating with the glands singly or in parcels of 2 or 3; filaments filiform; anthers didymous, opening longitudinally. Ovary half-inferior, 1-celled, with 3-5 parietal placentæ; styles 3-5, subulate,

\* This Suborder is usually regarded as a distinct Order, and placed in *Calycifloræ*. I retain it here on account of the very intimate relationship between *Homalium*, *Scolopia*, and *Trimeria*.

divergent; ovules few, pendulous.—*Fl. Cap. i. p. 72* (Blackwellia).

Shrubs or small trees, mostly tropical. Leaves toothed or entire, simple. Flowers in axillary or terminal spikes, racemes or panicles.—1 or perhaps 2 species found at Natal.

## ORDER XI. VIOLARIEÆ.

Flowers bisexual. Sepals 5, persistent, separate. Petals 5, unequal, the lower one spurred at base. Stamens 5; filaments broad and flat; anthers adnate, conniving round the stigma. Ovary 1-locular, with 3 parietal placentas. Capsule 3-valved, bearing the seeds in the middle of each valve.—Herbs or half-shrubby plants, with alternate, simple, entire or cut, stipuled leaves. Flowers axillary, solitary or variously arranged. “Violet” and “Pansy.”

Sepals eared at base . . . . . 1. VIOLA.

Sepals not eared at base . . . . . 2. IONIDIUM.

### 1. VIOLA, Linn.

Sepals 5, nearly equal, prolonged at base into ear-like lobes. Petals 5, unequal, the under one (*labellum*) spurred or saccate at base.—*Fl. Cap. i. p. 73*; *Thes. Cap. t. 46*.

Herbs or small undershrubs.—2 South African species, with linear or linear-lanceolate leaves, and subulate stipules. Flowers violet-blue. Natives of the South-Western districts. *V. arvensis*, Murr., a weed of cultivation, is naturalized throughout the colony.

### 2. IONIDIUM, Vent.

Sepals 5, unequal, not prolonged at base. Petals 5, very unequal, the under one (*labellum*) much larger than the rest, with a dilated and concave claw, shortly spurred or saccate at base.—*Fl. Cap. i. p. 74*; *Thes. Cap. t. 47*.

Herbs or undershrubs. Leaves alternate or opposite, serrate or entire, stipulate. Flowers axillary or in terminal racemes.—4 South African species, natives of the Eastern district and Natal.

## ORDER XII. DROSERACEÆ.

Flowers bisexual, regular. Sepals 5, persistent. Petals 5, equal. Stamens 5, on slender filaments. Ovary 1-celled, with 3–5 parietal placentas, or 3-celled; styles 1–3–5, often forked or multifid. Capsule dry, splitting.—Herbs or undershrubs, covered with viscidly glandular hairs. “Sundew or Catch-fly.”

Styles 3–5, 2-fid or 2-partite. Ovary 1-celled . . . . . 1. DROSERA.

Style 1, simple, stigma capitate. Ovary 3-celled . . . . . 2. RORIDULA.

1. **DROSERÀ**, Linn.

Calyx 5-parted. Petals 5, obovate. Stamens 5; anthers adnate, opening by slits. Ovary 1-celled, with 3-5 parietal placentas; ovules many; styles 3-5, 2-fid or 2-partite, the branches undivided or multifid. Capsule membranous, 3-5-valved, many-seeded.—*Fl. Cap. i. p. 75*; *Thes. Cap. t. 26*.

Stemless or caulescent herbs. Leaves scattered or rosulate, bearing on the upper surface and margin glandular hairs, stipulate. Flowers in scorpioid cymes or secundly racemose, rarely solitary; rosy purple or white, handsome. Petals very delicate, soon withering.—8 South African species, dispersed through the colony.

2. **RORIDULA**, Linn.

Calyx 5-parted. Petals 5, oval or oblong. Stamens 5; anthers adnate, opening by pores. Ovary 3-celled; ovules solitary or in pairs, pendulous from the summit; style simple; stigma capitate. Capsule 3-celled, 3-valved; seeds solitary.—*Fl. Cap. i. p. 79*.

Shrubs, very viscid and gland-hairy. Leaves linear-lanceolate, acuminate, entire or pinnatifid, 2-3 inches long, 1½-2 lines wide. Flowers spiked or racemose.—2 species, natives of the Western district.

ORDER XIII. **POLYGALEÆ**.

Flowers bisexual, irregular. Sepals 5, unequal, the two lateral often coloured like petals. Petals 3-5; the two lateral small; the lower (keel) large, enclosing the stamens and ovary, and often crested in front. Stamens 8, monadelphous; anthers opening by pores. Ovary 2-celled; ovules solitary, pendulous. Fruit a capsule or drupe.—Small shrubs, half-shrubs, or herbs. Leaves simple, entire, without stipules. Flowers racemose or spiked.

Sepals very unequal, the two lateral wing-like.

Fruit a 2-celled, oblong or obcordate capsule . . . 1. **POLYGALA**.

Fruit a fleshy, ovoid drupe . . . . . 2. **MUNDTIA**.

Fruit 1-celled, dry, indehiscent, winged at the apex . . . 4. **SECURIDACA**.

Sepals subequal, similar; fruit an oblong capsule . . . 3. **MURALTIA**.

1. **POLYGALA**, Linn.

Sepals 5; the two lateral much larger than the rest, wing-like and coloured. Petals 3-5, united at base and attached to the staminal tube; the lower boat-shaped, usually crested below the apex; the lateral small, simple or 2-fid; upper frequently wanting. Stamens 8, united into a split tube, and hidden within the lower petal; anthers fixed, 1-celled, opening by terminal pores. Style bent upwards; stigma oblique.

Capsule 2-celled, membranous, compressed, dehiscing at the margins; seeds mostly pubescent.—*Fl. Cap.* i. p. 80.

A cosmopolitan genus.—About 40 South African species (several recently discovered at Natal, undescribed), dispersed. Shrubs, half-shrubs, perennial or annual herbs. Juice very bitter, tonic.

## 2. MUNDTIA, Kunth.

Sepals, petals, and stamens as in *Polygala*. Style compressed, thickened upwards, 2-lobed, the posterior lobe horizontal, the anterior vertical. Fruit a fleshy, ovoid, 1–2-seeded drupe.—*Fl. Cap.* i. p. 95.

*M. spinosa*, a spinous, much-branched, rigid shrub, with oblong, obovate, cuneate or linear, thick, glabrous leaves, and red or white flowers, is common throughout the colony. The succulent fruit is eaten by birds and children.

## 3. MURALTIA, Neck.

Sepals 5, dry and membranous, subequal, the two lateral somewhat longer than the rest. Petals and stamens as in *Polygala*. Capsule membranous, compressed, with 4 horns or tubercles at its upper angles; very rarely hornless.—*Fl. Cap.* i. p. 95.

An endemic genus of upwards of 50 species. They are small but rigid shrubs or half-shrubs, with tufted or rarely scattered, rigid, mostly pungent-mucronate, narrow, entire leaves. Flowers axillary, solitary, subsessile or pedicellate, bright purple, 3-bracted at base.

## 4. SECURIDACA, Linn.

Calyx and stamens as in *Polygala*. Two lateral petals attached to the base of the staminal tube, separate from the keel, erect, connivent; keel about of equal length, concave, helmet-shaped, erect or 3-lobed; upper petals rudimentary or 0. Anthers 2-celled. Ovary 1-celled, 1-ovuled. Fruit samaroid, indehiscent, hard or woody at base and often crested, produced at the apex into a long or shortish wing.—*Fl. Cap.* ii. p. 585.

Shrubs or shrublets, often climbing; natives of America, Africa, and Asia. Leaves mostly entire and 2-glanded. Racemes or panicles terminal or axillary. *S. oblongifolia*, also a native of Abyssinia, occurs at Algoa Bay.

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## ORDER XIV. PITTOSPOREÆ.

Flowers perfect, regular or suboblique. Sepals 5, separate, imbricate. Petals 5, hypogynous, imbricate, longer than the sepals, generally with an erect claw and spreading limb. Stamens 5, hypogynous, free, alternate with the petals; anthers versatile. Torus small, conical. Ovary 2-(rarely 3–5-)

celled; style single, terminal; ovules many, axile. Fruit capsular, or fleshy and pulpy.—Trees or shrubs, commonly glabrous. Leaves alternate, entire or toothed. Flowers white blue yellow greenish or red, conspicuous.

### 1. PITTOSPORUM, Banks.

Sepals separate or connate at base. Petals 5, their claws erect, connivent; limbs spreading. Filaments subulate. Ovary sessile, imperfectly 2-5-celled; style short; stigma capitate. Capsules subglobose or obovate, with leathery, thick, septiferous valves. Seeds lying in viscid resin, smooth.—*Fl. Cap.* i. p. 443.

A considerable genus, widely dispersed, chiefly in the southern hemisphere. *P. viridiflorum*, Sims, the only Cape species, is a glabrous shrub, common in the Eastern district, Caffraria, and extending to Natal. Leaves obovate, tapering at base, very entire, leathery, shining; panicle subumbellate, terminal. Petals yellow-green.

## ORDER XV. FRANKENIACEÆ.

Flowers bisexual, regular. Calyx tubular, 4-5-toothed, ribbed, persistent, hardening after flowering. Petals 4-5, with long claws, deciduous. Stamens mostly 6. Ovary 1-celled, with 3-5 parietal placentas; ovules many. Capsule enclosed in the calyx, many-seeded; seeds albuminous, with an axile embryo.—Small, perennial, or half-shrubby plants, with crowded, small, narrow leaves. Flowers purple or white.

### 1. FRANKENIA, Linn.

The only genus of the Order.—*Fl. Cap.* i. p. 114.

3 species found in South Africa, natives of salt-marshes or seashores.

## ORDER XVI. CARYOPHYLLÆ.\*

Flowers bisexual, regular. Calyx 4-5-cleft or parted, persistent, imbricate. Petals 4-5, entire or 2-fid, or minute or 0. Stamens 4-10, inserted with the petals on a hypogynous or slightly perigynous ring; filaments filiform; anthers 2-celled. Torus often minute (in some *Sileneæ* elongate, stipe-like). Ovary free, 1-celled, or rarely at base 2-5-

\* The following genera, included in this Order in 'Flora Capensis,' (following the views of Bentham and Hooker) are removed as follows:—*Corrigiola*, *Herniaria*, *Pollichia*, to PARONYCHIEÆ; *Orygia*, *Glinus*, *Mollugo*, *Pharnaceum*, *Hypertelis*, *Cœlanthum*, *Psammotropha*, *Adenogramme*, and *Polpoda*, to FICOIDEÆ.



celled; styles 2-5, spreading, or more or less combined, stigmatose on the upper surface; ovules 2 or many, on cords rising from the bottom of the ovarian cavity, free or united in a central column. Capsules membranous or crustaceous, opening by apical teeth or splitting into valves, rarely subindehiscent or opening transversely. Seeds reniform, subcompressed; embryo curved round the albumen or excentric.—Herbs or half-shrubby plants; branches mostly swollen at the nodes. Leaves opposite, quite entire, exstipulate or with membranous stipules. Flowers in cymes panicles or clusters.

Tribe 1. *SILENÆ*. Calyx tubular, 4-5-toothed. Petals and stamens hypogynous, borne, with the ovary, on a stipe-like “gynophore,” rarely sessile. Petals clawed. Styles separate to the base. Stipules 0. (Gen. 1-3.)

Styles 2. Calyx bracteate at base . . . . . 1. *DIANTHUS*.  
 Styles 3. Calyx nude at base, 5-toothed . . . . . 2. *SILENE*.  
 Styles 5. Calyx nude at base, with leafy lobes . . . . 3. *AGROSTEMMA*.

Tribe 2. *ALSINÆ*. Sepals 4-5, separate to the base, or nearly so. Petals and stamens hypogynous. Petals not clawed. Styles separate to the base. Stipules 0 or membranous. (Gen. 4-7.)

Stipules none; petals 2-fid.

Styles 3 . . . . . 4. *STELLARIA*.  
 Styles 4-5 . . . . . 5. *CERASTIUM*.

Stipules membranous; petals entire.

Styles 5. (Petals white.) . . . . . 6. *SPERGULA*.  
 Styles 3. (Petals pink or purple.) . . . . . 7. *SPERGULARIA*.

Tribe 3. *POLYCARPÆ*. Calyx as in *Alsineæ*; also the petals, but commonly much smaller or obsolete. Style simple at base, 3-fid or rarely 2-fid above. Stamens 5 or fewer. Stipules membranous. (Gen. 8-10.)

Petals deeply 2-fid or 4-fid . . . . . 8. *DRYMARIA*.

Petals entire.

Sepals membranous, not keeled . . . . . 9. *POLYCARPÆA*.  
 Sepals membranous-edged, sharply keeled . . . . 10. *POLYCARPON*.

## TRIBE 1. *SILENÆ*. (Gen. 1-3.)

### 1. *DIANTHUS*, Linn.

Calyx tubular, 5-toothed, with 2 or more close-lying bracts at base. Petals 5, with long claws, often toothed or lacerate. Stamens 10. Styles 2, filiform. Capsules cylindrical or oblong, opening by 4 teeth.—*Fl. Cap.* i. p. 122.

Herbs or small half-shrubs. Leaves generally grass-like. Flowers terminal, solitary or in cymes or panicles.—The garden Pink and Carnation belong to this genus. 9 reputed South African species, several of them depending on very slight characters, are dispersed through the colony.

### 2. *SILENE*, Linn.

Calyx tubular, 5-toothed, ebracteate at base. Petals 5, on

long claws, the limb entire, 2-fid or multifid. Stamens 10. Ovary partially 3-5-celled at base, 1-locular above. Styles 3. Capsules opening by 6 teeth.—*Fl. Cap. i. p. 125.*

Mostly herbaceous, often annual, dispersed over the globe. Leaves broad or narrow, frequently pubescent or viscidly hairy.—13 Cape species.

### 3. AGROSTEMMA, Linn.

Calyx tubular, leathery, with 5 long, leafy, spreading lobes. Petals 5, clawed, not coronate. Stamens 10. Styles 5. Capsules opening by 5 teeth.—*Fl. Cap. i. p. 129.*

*A. Githago*, Linn., the "Corn-cockle," a weed of cornfields, introduced from Europe.

## TRIBE 2. ALSINÆ. (Gen. 4-7.)

### 4. STELLARIA, Linn.

Calyx 4-5-parted. Petals 2-fid or 2-parted. Stamens 8-10, rarely fewer. Styles 3. Capsules opening by 6 teeth.—*Fl. Cap. i. p. 130.*

*S. media*, Vill. (common Chickweed), a cosmopolitan weed, occurs in cultivated ground.

### 5. CERASTIUM, Linn.

Sepals and 2-fid petals 4-5. Stamens 8-10. Styles 4-5. Capsules opening by 8-10 teeth.—*Fl. Cap. i. p. 130.*

Weeds and weed-like plants, mostly hairy, often clammy. Sonder describes 4 species, one of which is a weed of cultivation.

### 6. SPERGULA, Linn.

Calyx 5-parted; sepals herbaceous, membrane-edged. Petals 5, ovate, entire, subhypogynous. Stamens 5-10, on a subhypogynous ring. Styles 5. Capsules 5-valved.—*Fl. Cap. i. p. 135.*

Small herbs of temperate climates. *S. arvensis*, Linn., is a weed in neglected fields.

### 7. SPERGULARIA, Pers.

Calyx 5-parted; sepals herbaceous, obtuse. Petals 5, entire, subhypogynous. Stamens 10, rarely 5-3, on a subhypogynous ring. Styles 3. Capsules 3-valved.—*Fl. Cap. i. p. 134.* *Lepigonum*, *Fries.*

Small cosmopolitan herbs, found by the seashore and in salt soil, throughout the colony. Flowers purplish or rosy, pretty. Leaves awl-shaped, fleshy, with membranous stipules.

## TRIBE 3. POLYCARPÆ. (Gen. 8-10.)

### 8. DRYMARIA, Willd.

Calyx 5-parted. Petals 5, deeply 2-4-lobed or parted.

Stamens 5 or fewer, subhypogynous. Ovary many-ovuled. Style filiform, 3-fid above. Capsules membranous, 3-valved, many-seeded.—*Fl. Cap.* i. p. 135.

*D. cordata*, W., a common South American plant, was found at the Hanglip by Mundt. It has cordate or roundish leaves, bristle-like stipules, and small white flowers in forked, much-branched cymes.

### 9. POLYCARPÆA, Linn.

Calyx 5-parted; sepals more or less membranous, concave, nerveless, not keeled, entire, pointless. Petals 5, subhypogynous, entire or 2-dentate. Stamens 5, hypogynous. Ovary many-ovuled; style 3-fid. Capsules 3-valved, many-seeded.—*Fl. Cap.* i. p. 133.

Small, much-branched herbs, common to the tropical and subtropical regions of both hemispheres. Leaves opposite or pseudo-verticillate, linear, oval, or spatulate. Stipules shining, silvery, copious. Flowers in tufts or corymbose cymes.—*P. corymbosa*, Lam., a widely-dispersed species, occurs at Port Natal.

### 10. POLYCARPON, Læffl.

Calyx 5-parted; sepals herbaceous, membrane-edged, compressed, strongly keeled and mucronate. Petals 5, entire or emarginate. Stamens 3-5. Ovary many-ovuled. Style 3-fid. Capsules 3-valved, many-seeded.—*Fl. Cap.* i. p. 133.

Small herbs. *P. tetraphyllum*, a decumbent, forked, much-branched annual, with obovate, opposite or 4-nate leaves, panicked flowers, short emarginate white petals, and silvery stipules, is a common weed by roadsides and in waste places throughout the colony.

## ORDER XVII. PORTULACÆÆ.

Flowers regular, perfect. Sepals fewer than the petals, commonly 2, rarely 5, free or adnate to the ovary, strongly imbricate. Petals 4-5, rarely many, hypogynous or rarely perigynous, free or connate, imbricate, withering early. Stamens inserted with the petals, mostly definite. Ovary free or half-inferior, 1-celled; style 2-3-fid; ovules 2 or many, on long, slender cords rising from the base, and either free or united in a central column. Capsules membranous or crustaceous, splitting into as many valves as the style branches. Seed as in *Caryophyllææ*.—Herbs or shrubs, mostly succulent and glabrous. Leaves alternate or opposite, entire, often fleshy.

Capsules half-inferior, opening transversely, many-

seeded . . . . . 1. PORTULACA.

Capsules 3-valved, splitting longitudinally.

Seeds winged, numerous . . . . . 2. ANACAMPSEROS.

Seeds wingless, numerous . . . . . 3. TALINUM.

Fruit 3-winged, indehiscent, 1-seeded . . . . . 4. PORTULACARIA.

1. **PORTULACA**, Linn.

Sepals 2, united at base into a tube attached to the ovary, free above, deciduous. Petals 4-6, free or slightly connate at base. Stamens 8 or many. Ovary half-inferior, many-ovuled; style deeply 3-8-fid. Capsule membranous, half-inferior, splitting across (circumscissile) about the middle.—*Fl. Cap.* ii. p. 381.

Small, fleshy, widely-dispersed herbs. *P. oleracea* is a common weed in gardens throughout the colony. *P. quadrifida* and *P. pilosa* are rare.

2. **ANACAMPSEROS**, Sims.

Sepals 2, at length deciduous. Petals 5, very fugacious. Stamens 15-20 or more, hypogynous; filaments distinct, adhering to them. Ovary free, many-ovuled; style filiform, 3-fid at the apex. Capsules conical, 1-celled, 3-valved, the valves often 2-partite, and then apparently 6-valved; seeds many-winged.—*Fl. Cap.* ii. p. 382.

A South African genus of 9 species, natives of dry plains to the north and north-east. Very dwarf plants. Leaves roundish or ovate, or lanceolate, fleshy, sometimes very minute. Stipules membranous, larger than the leaves, much split. Flowers sessile, involucred or on long peduncles, opening only in sunshine.

3. **TALINUM**, Juss.

Sepals 2, ovate, separate, deciduous. Petals 5, ephemeral. Stamens 10-30, inserted with the petals, and often adnate to them. Style filiform, 3-fid at the apex. Capsules 3-valved, 1-celled, many-seeded. Seeds wingless, many.—*Fl. Cap.* ii. p. 385.

Chiefly Asiatic and American. *T. Caffrum*, E. and Z., the only South African species, grows in Caffraria. It is a glabrous perennial,  $\frac{1}{2}$ -1 foot high. Leaves oblong-linear or linear-lanceolate, with revolute margins. Flowers solitary, in the axils of the upper leaves.

4. **PORTULACARIA**, Jacq.

Sepals 2, persistent, membranous. Petals 5, persistent, equal, obovate, hypogynous. Stamens 5-7, inserted with the petals; anthers short, often imperfect. Ovary ovate, 3-angled; style 0; stigmas 3, spreading. Fruits 3-quetrous, 3-winged, indehiscent, 1-seeded.—*Fl. Cap.* ii. p. 385.

Glabrous, fleshy shrubs or small trees, natives of South Africa. Leaves opposite, roundish, flat, deciduous. Peduncles opposite; pedicels 1-flowered, in threes. Flowers very small, rosy. "Speckboom."—2 species: *P. Afra*, Jacq., grows in the Karroo and in the Eastern district; *P. Namaquensis*, Sond., in Namaqualand.

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ORDER XVIII. **TAMARISCINEÆ.**

Flowers bisexual, minute, regular, 4-5-parted, spiked or racemose. Stamens 4-5, united at base into a ring. Ovary 1-celled, with parietal placentas; ovules many; styles 3.—Shrubs, with minute, scale-like, crowded or imbricate leaves.

1. **TAMARIX**, Linn.

Sepals 4-5, unequal, imbricated. Petals 4-5, hypogynous, equal. Stamens 4-10 on the glandular margin of a fleshy, hypogynous ring; filaments separate at base. Styles 3. Capsules 3- rarely 2-4-valved, many-seeded; seeds with a terminal tuft of silky hairs.—*Fl. Cap. i. p. 119.*

Small shrubs, growing in deserts or in salt soils. Leaves very minute, often reduced to mere scales. Flowers pink or white, conspicuous by their abundance, in terminal spiked racemes.—*T. articulata*, Vahl, is found in Namaqualand.

ORDER XIX. **ELATINACEÆ.**

Flowers bisexual, regular. Sepals 2-5, separate. Petals 2-5. Stamens as many or twice as many. Ovary 2-5-celled; ovules many; styles 2-5. Capsule splitting into 2-5 valves. Seeds without albumen.—Small herbs or half-shrubs, growing in wet places. Leaves opposite, entire or toothed, with interpetiolar membranous stipules. Flowers axillary.

1. **BERGIA**, Linn.

Sepals 5. Petals 5, hypogynous. Stamens 10, those opposite the petals shortest, and occasionally wanting. Ovary 5-celled; styles 5; ovules many. Capsule 5-celled, 5-valved, many-seeded.—*Fl. Cap. i. p. 115; Thes. Cap. t. 24, 133.*

4 South African species, dispersed through the colony.

ORDER XX. **HYPERICINEÆ.**

Flowers bisexual, regular. Sepals 5, persistent, imbricate. Petals 5, unequal-sided, spirally twisted in the bud, and often black-dotted at margin. Stamens numerous, united in 3-5 parcels; anthers 2-celled. Ovary imperfectly 3-5-celled; styles 3-5, spreading; ovules many. Fruit a dry or fleshy capsule, 1-5-celled. Seeds without albumen.—Shrubs or herbs, with resinous juice. Leaves opposite, very entire, mostly pellucid-dotted, simple, exstipulate. Flowers showy, but not fragrant.



1. **HYPERICUM**, Linn.

Calyx 5-parted ; sepals equal, or 2 outer largest. Petals 5. Stamens many, in 3-5 parcels. Ovary sessile, 1- or imperfectly 3-5-celled. Capsule commonly splitting.—*Fl. Cap.* i. p. 117.

A cosmopolitan genus, much more numerous in the northern hemisphere. There are 2 South African species, small herbs, with opposite, sessile, dotted leaves, and yellow cymose flowers. A third species (*H. humifusum*), probably of European origin, occurs among Drège's Cape plants; no habitat given.

ORDER XXI. **GUTTIFERÆ.**

Flowers regular, commonly dioecious or polygamous. Sepals 2-6, rarely more, very strongly imbricate, or decussate in pairs. Petals as many as sepals, hypogynous, strongly imbricate or twisted.—Male: Stamens mostly many, hypogynous; filaments mostly short and thick, free or variously connate; anthers thick, mostly opening outwards. Ovary rudimentary or more or less formed.—Female: Staminodia surrounding ovary, mostly definite or fewer than in the male. Ovary sessile on a flat or fleshy torus, 2- or many-celled; stigmas as many as the ovarian cells, sessile or subsessile, radiating or connate in a peltate disk, rarely on a long style; ovules 1 or many axile. Fruit mostly fleshy, or with a leathery coat, pulpy within, rarely dehiscent. Seeds thick, without albumen.—Mostly tropical trees and shrubs, with resinous juice, and opposite, quite entire, simple, exstipulate leaves.

1. **GARCINIA**, Linn.

Flowers polygamous. Sepals 4, decussate. Petals 4, imbricate.—Male: Stamens many, free or connate in an entire or 4-lobed mass, or tetradelphous; anthers sessile or on filaments, erect, 2-celled, opening by slits or pores, rarely 4-celled.—Female and hermaphrodite: Staminodia 8 or many, few or variously combined. Ovary 2-12-celled; stigma broadly peltate, entire or variously lobed; ovules solitary, erect. Berry coated. Seeds enclosed in pulp.

Tropical trees, with yellow juice; some of them yield the gamboges of commerce. Leaves leathery. Flowers terminal or axillary.—A species 10-12 feet high, with cream-coloured flowers, and beautiful dark green, glossy, acute leaves, which (if new) may be called *G. Gerrardi*, has recently been found in the Umvoti district, Natal, by Mr. Gerrard (n. 1181).

## ORDER XXII. MALVACEÆ.

Flowers bisexual, regular, mostly conspicuous. Calyx 5-fid, with valvate æstivation, mostly involuclled at base. Petals 5, strongly twisted in bud, withering and persistent, attached to the base of the staminal column. Stamens many, united in a tube, concealing the ovary and styles; anthers reniform, 1-celled. Carpels 3-5 or many, free or combined in a several-celled ovary. Fruit dry or fleshy. Seeds with a curved embryo, plaited cotyledons, and little or no albumen.—Leaves alternate, simple, palmately nerved, often lobed, stipuled.

Tribe 1. MALVEÆ. Staminal column bearing anthers at or to the very summit. Carpels separable at maturity. Stigmas as many as the carpels. (Gen. 1-6.)

Styles filiform, stigmatose along the upper side; calyx furnished with an involucl.

Involucl of 6-9 bracteoles . . . . . 1. ALTHÆA.

Involucl of 3 bracteoles . . . . . 2. MALVA.

Styles capitellate, the stigmatic tissue confined to the apex.

Calyx with an involucl.

Ovules solitary. Involucl 3-bracted . . . . . 3. MALVASTRUM.

Ovules 2-3 in each carpel. Involucl 3-leaved or 3-fid . . . . . 4. SPHÆRALCEA.

Calyx nude at base.

Ovules solitary . . . . . 5. SIDA.

Ovules 3 or more in each carpel . . . . . 6. ABUTILON.

Tribe 2. URENEÆ. Staminal column bearing anthers on its outer surface, the apex with none, protruding, truncate or 5-toothed. Carpels separable at maturity. Stigmas twice as many as the carpels (10), capitellate at the summit. (Gen. 7.)

Involucl 5-20-leaved . . . . . 7. PAVONIA.

Tribe 3. HIBISCEÆ. Staminal column bearing anthers on its outer surface, the apex nude, protruding, truncate or 5-toothed. Carpels united into a several-celled capsule. Stigmas as many as the carpels (3-5), capitate. (Gen. 8-10.)

Ovary 3-celled; styles 3; bracteoles 3 or many . . . 8. FUGOSIA.

Ovary 5-celled.

Involucral bracteoles 5 or many, separate . . . . 9. HIBISCUS.

Involucral bracteoles united in a toothed cup . . . 10. PARTIUM.

TRIBE 1. MALVEÆ. (Gen. 1-6.)

1. ALTHÆA, Linn.

Involucl of 6-9 bracteoles, united at base. Staminal column antheriferous at the summit. Ovary of many carpels; ovules solitary; styles as many as the carpels, stigmatose

along the inner face. Fruit of many reniform, dry, 1-seeded, separable carpels.—*Fl. Cap.* i. p. 158.

Annuals or perennials, natives chiefly of the northern hemisphere. *A. Ludwigii*, Linn., a hispid, much-branched annual, with nearly glabrous, deeply 5-lobed leaves, and axillary white flowers, occurs at the Orange River. *A. Burchellii*, DC., an endemic species, is unknown to me.

## 2. MALVA, Linn.

Involucel 3-bracted, persistent. Staminal column bearing anthers at the multifid summit. Ovary of many carpels; styles as many as the carpels, stigmatose along the inner face; ovules solitary. Fruit of many dry, 1-seeded, hard-shelled, indehiscent, separable carpels; seed filling the cavity.—*Fl. Cap.* i. p. 159.

Herbs, natives of temperate climates. *M. parviflora*, Linn., a prostrate procumbent plant, with long-petioled, reniform, bluntly 5-7-lobed leaves, and small, clustered, subsessile, axillary flowers (a European weed), occurs on roadsides and in waste places.

## 3. MALVASTRUM, A. Gray.

Involucel 3-bracted or wanting. Styles capitellate. Other characters as in *Malva*.—*Fl. Cap.* i. p. 159.

Herbs or small shrubs, known from *Malva* by the capitate stigmas. Leaves lobed, stipuled. Flowers axillary or racemose. About 15 South African species, dispersed.

## 4. SPHÆRALCEA, St. Hil.

Involucel of 3 (or 2) narrow bracteoles, or monophyllous and 3-fid. Staminal column and stigmas as in *Malvastrum*. Ovules 2-3 in each carpel. Fruit of many compressed, 2-valved, dehiscing, 2-3-seeded carpels, separating at maturity from a central torus.—*Fl. Cap.* i. p. 165. *Also* *Sphæroma*, *Harv. l. c.* p. 166.

Herbs or shrubs, with the habit of *Malvastrum*.—4 South African species, natives of the Western and Northern districts; 2 have 3-leaved and 2 have 3-fid involucels, the latter constituting the subgenus *Sphæroma*.

## 5. SIDA, Linn.

Involucel 0. Staminal column antheriferous at its multifid summit. Ovary of 5-15 carpels; styles 5-15; stigmas capitellate; ovule solitary, pendulous. Fruit of 5-15 1-seeded carpels, dehiscent at the summit and at length separating; seed 3-cornered, suspended.—*Fl. Cap.* i. p. 166.

An immense tropical or subtropical genus, very various in aspect. 5 species in the Eastern district and at Natal, of which 2 are endemic, the others subtropical weeds.—Leaves entire or lobed, often penninerved. Flowers small, yellow or white.

6. **ABUTILON**, Tourn.

Ovules 3 or several in each carpel. Fruit of numerous membranous, 3- or more-seeded carpels, opening by the ventral suture and subsistent. Other characters as in *Sida*.—*Fl. Cap.* i. p. 168.

2 (or more) species in the Eastern districts of Natal. Herbs or shrubs, often with very soft, velvety, cordate, subentire leaves.

## TRIBE 2. URENEÆ. (Gen. 7.)

7. **PAVONIA**, Cav.

Involucel 5-15-leaved, persistent. Staminal column naked and 5-toothed at the apex, bearing stamens on its outer surface. Ovary of 5 carpels, united round a central axis; styles confluent below, 10-cleft above; stigmas 10, capitate. Fruit of 5 indehiscent, 1-seeded carpels.—*Fl. Cap.* i. p. 169.

Shrubs or herbs, chiefly tropical or subtropical, variable in habit.—2 species from the Eastern district and 4 from Natal.

## TRIBE 3. HIBISCEÆ. (Gen. 8-10.)

8. **FUGOSIA**, Juss.

Involucels 3 or several, often small or deciduous, sometimes tooth-like. Calyx 5-fid. Staminal column naked and 5-toothed at the apex, bearing stamens on its outer surface. Ovary 3-4-celled, cells 3- or many-ovuled; style club-shaped at the summit, 3-4-furrowed, or divided in 3-4 short erect lobes. Capsule 3-4-valved.—*Fl. Cap.* ii. p. 587.

Shrubs or half-shrubs, chiefly subtropical, with the habit of *Hibiscus*. Leaves entire or lobed, rarely parted. Flowers mostly yellow. Calyx and petals often black-dotted.—2 South African species: *F. Gerrardi*, found by Mr. Gerrard near Ladismith, Natal; *F. triphylla*, in Damaraland, by Mrs. Kolbe.

9. **HIBISCUS**, Linn.

Involucel 5-20-leaved. Petals expanded. Staminal column 5-toothed at the apex, bearing stamens on its outer surface. Ovary 5-celled; style 5-cleft; stigmas 5, capitate; ovules numerous. Capsule 5-celled, 5-valved, loculicidal, enclosed in the persistent calyx.—*Fl. Cap.* i. p. 170.

A large and varied tropical and subtropical genus, usually with large, handsome, bright-coloured flowers. Leaves entire or lobed, sometimes multipartite, often stellate-pubescent.—25 species, many of them endemic, mostly natives of the Eastern district and Natal. *H. Æthiopicus*, Linn., is found throughout the colony; and *H. Trionum*, Linn., an equally dispersed (annual) weed of cultivation.

10. **PARITIUM**, A. Juss.

Involucel monophyllous, 10–12-toothed or cleft. Petals and staminal column as in *Hibiscus*. Ovary 5-celled, each cell partially divided into two by a spurious parietal dissepiment; ovules numerous. Capsule 5-celled, the cells imperfectly 2-locular.—*Fl. Cap.* i. p. 177.

Tropical trees, mostly growing near the sea. Leaves cordate, entire or lobed; stipules broad, ovate. Flowers yellow, with a dark centre.—*P. tiliaceum* occurs at Natal, on the coast.

ORDER XXIII. **STERCULIACEÆ.**

Flowers regular, hermaphrodite or unisexual. Calyx monophyllous, mostly persistent, 5-(rarely 3–4–7-)fid, valvate in bud. Petals 5, free or attached to the staminal tube, twisted, or 0. Stamens monadelphous, either merely united at base into a ring, or combined in a longer or shorter tube; staminodia often alternating with stamens; anthers 2-celled, opening outwards. Ovary free, of 1–2–5 carpels, more or less united; style entire or splitting into as many branches as there are carpels; ovules 2 or many. Fruit dry, capsular or rarely indehiscent.—A large and varied Order, known from *Malvaceæ* by its 2-celled anthers. Leaves alternate, stipulate, simple or digitate. Inflorescence axillary or terminal, racemose or cymoso-paniculate, or reduced to solitary flowers. Petals very frequently persistent, withering.

Tribe 1. **STERCULIÆ.** Flowers unisexual. Calyx mostly coloured. Petals 0. Anthers 5–15, on the apex of a long or short column. Ripe carpels free, sessile or stipitate . . . . . 1. **STERCULIA.**

Tribe 2. **DOMBEYÆ.** Flowers bisexual. Petals often persistent, flat. Stamens (in the Cape genera) united at base into a cup, alternating singly or in parcels of 2–3, with 5 strap-shaped staminodia. (Gen. 2–3.)

Bracts deciduous. Fertile stamens 2–3 . . . . . 2. **DOMBEYA.**

Bracts persistent. Fertile stamens 5 . . . . . 5. **MELHANIA.**

Tribe 3. **HERMANNIÆ.** Flowers bisexual. Stamens 5, connate at base; no staminodia. (Gen. 4–6.)

Ovary 1-celled, unequal-sided; style lateral . . . . . 4. **WALTHERIA.**

Ovary 5-celled, many-seeded; style central.

Filaments broadly linear, oblong or obovate . . . . . 5. **HERMANNIA.**

Filaments abruptly dilated in the middle . . . . . 6. **MAHERNIA.**

TRIBE 1. **STERCULIÆ.**1. **STERCULIA**, Linn.

Flowers unisexual, without petals. Calyx coloured, campanulate or tubular, 5–7-cleft or parted, the segments leathery.



—Male: Staminal column shorter or longer than the calyx, solid, bearing anthers at the 5–10-toothed apex; anthers adnate, 2-celled, opening outwards.—Female: Staminal column adnate to the carpophore, the abortive anthers at the base of the ovary. Ovary stipitate, of 5 connivent or partially connate carpels; styles more or less united; ovules many. Follicles 5 or fewer, leathery or ligneous, few- or many-seeded.—*Fl. Cap.* i. p. 178; *Thes. Cap. t.* 3.

Trees, chiefly subtropical. *S. Alexandri*, Harv., our only species, was found near Uitenhage by Dr. Alexander Prior.

## TRIBE 2. DOMBEYÆ. (Gen. 2–3.)

### 2. DOMBEYA, Cav.

Involucre 3-leaved, unilateral, deciduous, sometimes 0. Calyx 5-parted, at length reflexed, persistent. Petals 5, obovate, unequal-sided, convolute in bud, flat when expanded, persistent. Stamens united at base, 5 imperfect (staminodia), strap-shaped or filiform, 10–15 fertile, antheriferous, alternating with the sterile in parcels of 2–3; anthers oblong, erect. Ovary sessile, 3–5-celled; style 3–5-cleft, with revolute arms, stigmatose above; ovules 2–4 in each cell. Capsules leathery, 3–5-celled.—*Fl. Cap.* i. p. 220; *Thes. Cap. t.* 89, 137–138.

Subtropical shrubs and small trees, chiefly African. Leaves cordate or lobed, many-nerved. Flowers rosy or white, in umbels or corymbs, the petals somewhat enlarged after flowering, and drying to a papery consistence. 6 South African species, natives of the Eastern district, Caffraria, and Natal.

### 3. MELHANIA, Forsk.

Involucre 3-leaved, persistent. Calyx 5-parted. Petals 5, obovate, unequal-sided, convolute in bud, erect. Stamens united at base, 5 sterile, strap-shaped, 5 alternate fertile, shorter; anthers sagittate, erect. Ovary 5-celled; style 5-fid at the summit; ovules numerous. Capsules 5-celled.—*Fl. Cap.* i. p. 221.

Small, softly hairy, half-ligneous or herbaceous plants. Leaves ovate or oblong. Peduncles axillary, 1–2-flowered.—4 South African species, natives of the Eastern district and Natal.

## TRIBE 3. HERMANNIÆ. (Gen. 4–6.)

### 4. WALTHERIA, Linn.

Calyx 5-cleft, 10-nerved, with or without a 3-leaved lateral involucre. Petals 5, oblong, with slender claws. Stamens 5, opposite the petals; filaments united into a tube at base;

anthers oblong, erect, 2-celled. Ovary oblique, 1-celled, 2-ovuled; style lateral. Capsules 1-celled, 2-valved, 1-seeded.—*Fl. Cap.* i. p. 180.

Herbs or shrubs, chiefly tropical. *W. Indica*, Linn., a widely-diffused species, occurs at Magalisberg.

### 5. HERMANNIA, Linn.

Calyx 5-cleft, often inflated. Petals 5, with hollow claws, spirally twisted in bud. Stamens 5, opposite the petals; filaments connate at base, broad, flat, oblong or obovate; anthers erect, taper-pointed. Ovary shortly stipitate, 5-celled; styles coalescing, separable. Capsules coriaceous, 5-celled, 5-valved, many-seeded, simple or crested at the summit.—*Fl. Cap.* i. p. 180.

Small shrubs or undershrubs, almost all South African. Pubescence stellate, woolly, velvety, glandular or scanty. Leaves entire, toothed or pinnatifid, often plaited. Peduncles axillary or subterminal, pseudo-racemose. Flowers yellow or orange, rarely creamy or white, often sweet-scented.—Upwards of 70 Cape species, dispersed.

### 6. MAHERNIA, Linn.

Filaments of the stamens suddenly dilated and mostly tuberculated in the middle or cruciform. Other characters as in *Hermannia*.—*Fl. Cap.* i. p. 207.

Small plants, with the habit of *Hermannia*. Peduncles mostly 2-flowered, terminal or opposite the leaves; pedicels slender, bracteolate at base. Flower nodding, red orange yellow or violet.—33 (or more) South African species, dispersed.

## ORDER XXIV. TILIACEÆ.

Like *Sterculiaceæ*, but the stamens not connate or tubular at base, and usually numerous; anthers 2-celled, opening inwards.—Trees shrubs or herbs, with mostly stellate pubescence, and stipulate simple leaves.

- |  |                |
|--|----------------|
| Flowers 4-parted; outer stamens beaded, without anthers . . . . .                                      | 1. SPARMANNIA. |
| Flowers 5-parted.  |                |
| Fruit fleshy, of 1-4 hard-shelled drupes . . . . .   | 2. GREWIA.     |
| Fruit a globose or oblong capsule, covered with hooked or straight, sharp and rigid bristles . . . . . | 3. TRIUMFETTA. |
| Fruit a pod-like capsule, 2-5-valved, splitting, many-seeded . . . . .                                 | 4. CORCHORUS.  |

### 1. SPARMANNIA, Th.

Sepals 4, lanceolate, pointless, deciduous. Petals 4, obovate, spreading horizontally. Stamens very many, the outer

sterile, bearded, the inner fertile, with nodose filaments. Ovary sessile, 4-celled; ovules many; style single; stigma 5-toothed. Capsules globose or oblong, 4-celled, 4-valved, loculicidal, covered with rigid bristles.—*Fl. Cap.* i. p. 223.

Shrubs or small trees, with pubescent, long-petioled, 5-7-angled or lobed leaves, and umbellate white flowers.—2 South African species: *S. Africana*, from the South-Eastern district, and *S. palmata*, from Caffraria and Natal.

## 2. GREWIA, Linn.

Sepals 5, linear, leathery, coloured within, deciduous. Petals 5, each with a nectariferous gland or pit at base, inserted at the base of a short columnar torus which supports the stamens and ovary. Stamens many; filaments filiform; anthers roundish. Ovary 2-4-celled; style simple. Drupe 2-4-lobed, containing 2-4 hard-shelled, 1-2-celled, 1-2-seeded nuts.—*Fl. Cap.* i. p. 224.

Trees or shrubs. Leaves undivided, entire or serrulate, 3-7-nerved at base, often pale beneath. Pubescence stellate. Flower purple or yellow, in cymes or solitary. Petals often shorter than the sepals.—11 South African species, dispersed.

## 3. TRIUMFETTA, Linn.

Sepals 5, linear, membranous, coloured, hooded at the point and dorsally mucronate, deciduous. Petals 5, without glands, inserted at the base of a short columnar torus, which supports the stamens and ovary. Stamens definite, 5-30; filaments thread-like; anthers roundish. Ovary 2-5-celled, the cells divided by a false parietal vertical septum; ovules in pairs; style filiform; stigma 2-5-lobed. Capsules subglobose, covered with straight or hooked prickles, 2-5-celled; cells 1-2-seeded.—*Fl. Cap.* i. p. 227; *Thes. Cap.* t. 52.

Shrubs half-shrubs or herbs, common in tropical countries. Leaves variable in shape in the same species, entire or lobed, serrate, many-nerved, often with glands on the serratures. Flower small, yellow or orange, solitary or clustered.—4 species occur in the Natal country

## 4. CORCHORUS, Linn.

Sepals 4-5, ovate or lanceolate, unequal, deciduous. Petals 4-5, obovate, clawed, hypogynous. Stamens many, mostly indefinite. Ovary sessile or shortly stipitate, 2-5-celled; ovules many; style short; stigmas 2-5. Capsules pod-like or roundish, 2-5-celled, 2-5-valved, loculicidal, many-seeded.

Herbs or half-shrubs, chiefly tropical. Leaves alternate, serrate, the teeth sometimes bristle-pointed. Flowers yellow, axillary or opposite leaves.—4 species, found at Natal and on the North-Eastern frontiers of the Cape colony.

## ORDER XXV. LINEÆ.

Flowers bisexual, regular. Sepals 5, rarely 4, free or united at base, imbricate. Petals as many, mostly twisted. Stamens as many (or twice or thrice as many) as petals, connate in a ring at base; anthers 2-celled. Glands 5, entire or 2-fid, adnate to the staminal tube, sometimes obsolete. Ovary free, 3-5-celled; ovules 1-2 in each cell, pendulous; styles 3-5, distinct or more or less united; stigma terminal. Fruit capsular or fleshy. Seeds with or without albumen.—Herbs shrubs or trees, mostly glabrous. Leaves alternate or rarely opposite, simple, entire or crenato-serrulate. Stipules present or absent. Flowers racemose or cymose, or clustered or solitary, axillary. Petals blue yellow or white, rarely red, mostly very fugitive.

Tribe 1. LINEÆ. Petals twisted, fugitive. Stamens as many as petals. Capsule opening through the septa. No stipules.

Herbs or undershrubs . . . . . 1. LINUM.

Tribe 2. ERYTHROXYLÆ. Petals imbricate, each with a plaited scale at base inside. Stamens twice as many as the petals. Drupe fleshy, indehiscent.

Shrubs . . . . . 2. ERYTHROXYLON.

## 1. LINUM, Linn.

Sepals 5, entire. Petals 5, twisted, fugitive. Stamens 5, perfect, alternating with as many tooth-like abortive filaments. Styles 5, rarely 3, separate or connate below; stigmas capitate or linear. Capsules spuriously 10-celled, 10-seeded; seeds without albumen.—*Fl. Cap. i. p. 308.*

Small undershrubs or herbs, found throughout the temperate zone. Leaves alternate, quite entire, sessile, without stipules. Flowers yellow.—4 Cape species, dispersed.

## 2. ERYTHROXYLON, Linn.

Sepals 5-6, connate at base or free. Petals as many, imbricate, deciduous, furnished at base on the inside with a plaited, mostly 2-lobed scale. Stamens 10-12, united at base into a short glandless or 10-glanded tube, often a little prolonged beyond the insertion of the filaments. Ovary 3-, rarely 4-celled; ovules 1-2; styles 3-4, distinct or more or less united at the apex, capitate or clavate. Drupe 1-celled, 1-seeded; seed albuminous.—*Fl. Cap. i. p. 233.*

Shrubs or small trees, mostly glabrous. Leaves alternate, entire, petioled. Stipules within the petiole. Flowers small, whitish, axillary.—3 species, found near Natal.

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## ORDER XXVI. MALPIGHIACEÆ.

Flowers bisexual, regular. Calyx 5-parted, imbricate, some or all of the segments 2-glanded at back. Petals 5, clawed, spreading. Disk expanded or often inconspicuous. Stamens 10 (5 sometimes abortive), connate at base. Ovary of 3 or 2 imperfectly united carpels, 3-2-lobed; ovules solitary. Albumen 0.—Shrubs, erect or climbing, with mostly opposite, simple, mostly entire leaves, and corymbose or racemose, red or yellow flowers. Pubescence silky.

Carpels each with a single dorsal wing . . . . . 1. ACRIDOCARPUS.

Carpels each 2- or several-winged.

Styles 3. Petals fringed . . . . . 2. TRIASPIS.

Style 1. Petals sagittate-ovate . . . . . 3. TRISTELLATEIA.

## 1. ACRIDOCARPUS, Guill. and Perr.

Calyx 5-fid, minutely glandular or glandless. Petals unequal, clawed, glabrous, subentire. Stamens 10, all perfect; filaments distinct, short, rigid; anthers large, cordato-lanceolate, glabrous. Ovary 3-celled, hairy, each lobe with a dorsal wing; styles 2, very long, divergent, filiform, flexuous, acute, coiled up in æstivation. Samaras 1-2, on an oblong receptacle expanding above into a straight or oblique wing, which is thickened along its upper margin.—*Fl. Cap.* i. p. 231; *Thes. Cap. t.* 19.

Trees or shrubs, erect or climbing. Leaves alternate or opposite, entire, glabrous or silky. Racemes or corymbs terminal or lateral. Flower yellow.—3 species in the Natal country.

## 2. TRIASPIS, Burch.

Calyx short, 5-parted, without glands. Petals longer than the calyx, clawed, fringed. Stamens 10, fertile, unequal, connate at base and adnate to the stipe of the ovary. Carpels 3, each expanded into a wing at each side, and united into a 3-lobed, 6-winged, shortly stipitate ovary; styles 3, glabrous, elongate, flat, acute. Samaras 3 or fewer, winged at the margin, the wing shield-like, sometimes interrupted at the apex, commonly dorsally crested in the middle.—*Fl. Cap.* i. p. 232.

Mostly climbers. *T. hypericoides*, Beh., an erect shrub 3-4 feet high, with opposite, linear, glabrous leaves and rosy flower, was found by Burchell at Kosi Font, lat. 27° 52'.

## 3. TRISTELLATEIA, Thouars.

Calyx 5-parted, with minute glands or none. Petals clawed, keeled externally, glabrous, sagittate-ovate. Stamens 10, fertile, connate at base, those opposite the petals longer.



Ovary 3-lobed, the lobes many-crested dorsally; style 1 (the other 2 reduced to papillæ), slender, elongate. Samaras 3, many-winged; the wings narrow, elongate, stellately-patent.—*Fl. Cap.* ii. p. 591.

Climbers, with opposite or quaternate leaves, the petioles often 2-glanded. Racemes terminal and lateral. Flowers yellow.—*F. Madagascariensis*, Poir., was gathered at Delagoa Bay by Commander Owen.

## ORDER XXVII. ZYGOPHYLLÆ.

Flowers bisexual, regular or irregular. Calyx 4-5-parted. Petals 4-5, clawed, twisted, rarely 0. Stamens 8-10; filaments frequently furnished with a scale at base. Ovary sessile or on a short gynophore, furrowed or winged, 5-celled; ovules axile, 2 or several; style single, terminal, rarely 5 separate styles. Fruit capsular or fleshy.—Herbs or shrubs. Leaves opposite, mostly compound, stipulate. Flowers solitary, axillary or terminal, yellow or white, rarely red.

Petals 4-5.

Fruit thorny and tubercled, indehiscent. Leaves

pinnate . . . . . 1. TRIBULUS.

Fruit capsular, 4-5-angled, dehiscent.

Filaments simple at base.

Anthers linear. Ovary densely silky . . . . . 2. SISYNDITE.

Anthers cordate. Ovary glabrous . . . . . 4. FAGONIA.

Filaments each with an entire or bifid scale at

base : . . . . . 5. ZYGOPHYLLUM.

Petals 0.

Styles short, filiform. Stamens 10. Leaves simple,

fleshy . . . . . 3. AUGEA.

Styles 5. Stamens 5. Leaves 3-foliolate . . . . . 6. SEETZENIA.

TRIBE 1. TRIBULÆ. Seeds without albumen. (Gen. 1-3.)

### 1. TRIBULUS, Tourn.

Calyx 5-parted, deciduous or persistent, imbricated. Petals 5, spreading, longer than the calyx. Stamens 10; filaments subulate, the 5 opposite the calyx-lobes with a gland externally at base; anthers cordate, introrse. Ovary sessile, in a short 10-lobed cup, hairy, 5-celled; ovules 3-4 in each cell; style short or 0, rarely filiform; stigma large, 5-angled. Fruit depressed, 5-angled, of 5 indehiscent, dorsally tuberculated, thorny or winged, spuriously plurilocular carpels, each loculus 1-seeded. Seeds without albumen.—*Fl. Cap.* i. p. 352.

Weeds and weed-like, diffuse or prostrate herbs. Leaves opposite, one usually much smaller than the other, abruptly pinnate; leaflets in several pairs. Flowers yellow or white.—2 species: one a common weed throughout the country, the other found at Springbokkell by Zeyher.

## 2. SISYNDITE, E. Mey.

Calyx 5-parted, the lobes somewhat imbricate. Petals 5, at first short and truncate, at length oblong, longer than the calyx. Stamens 10, hypogynous; filaments subulate, glabrous, equalling the calyx; anthers linear, versatile, 2-celled, longitudinally slitting. Hypogynous scales 5, circling the ovary opposite the sepals. Ovary sessile, very hairy, 5-angled, 5-celled; ovules solitary, erect; style filiform, hairy, thickened into a clavate, 5-furrowed stigma. Fruit capsular, 5-lobed, the carpels compressed, ovate, acute, cross-furrowed, in all parts clothed with long golden-yellow hairs, at length separating and opening by the ventral sutures. Seed compressed, erect; testa membranous; embryo without albumen; cotyledons thick; radicle short, superior.—*Fl. Cap.* i. p. 354; *Thes. Cap.* t. 120.

*S. sparteæ*, E. M., is a broom-like bush, found between Natvoet and the Gariep, 2-3-chotomous and quite glabrous. Leaves opposite, minutely stipulate, pinnate, the petiole terete and like a twig, elongate; leaflets minute, subopposite, distant, in few pairs. Flowers large and handsome, axillary.

## 3. AUGEA, Th.

Calyx 5-cleft, persistent, valvate. Petals 0. Hypogynous disk cup-shaped, membranous, 10-toothed, with subulate-setaceous teeth. Stamens 10, inserted between the teeth of the disk; filaments very short, broad, trifid, the medial segment bearing an anther; anther fixed below the middle, oblong. Petaloid scales linear, white, bifid, outside the stamens and opposite them. Ovary angular, glabrous, 10-celled; ovules pendulous; style short, filiform; stigma simple. Capsules 10-angled, 10-valved. Seeds solitary, without albumen.—*Fl. Cap.* i. p. 355.

*A. Capensis*, Th., is an annual, glabrous, fleshy, Karroo-land herb, with the aspect of *Mesembryanthemum*. Leaves connate, terete, obtuse, flattish above. Stipules short. Flowers axillary, solitary or 2-3 together.

TRIBE 2. ZYGOPHYLLÆ. Seeds albuminous. (Gen. 4-6.)

## 4. FAGONIA, Tourn.

Calyx 5-parted, deciduous. Petals 5, clawed, longer than the calyx. Stamens 10, hypogynous, equal; filaments filiform, naked at base, erect; anthers cordate. Ovary sharply 5-angled, 5-celled; style 5-angled, continuous with the ovary; stigma acute. Capsules pyramidal, 5-sided, of 5 cocci, which fall away when ripe from a persistent axis.—*Fl. Cap.* i. *Add.* p. 21\*.

Small herbs. *F. Cretica*, Linn., a procumbent, much-branched, glabrous

or glandularly-pubescent plant, with 3-foliolate leaves and lilac-purple flowers with bright orange stamens, has been found in Namaqualand by Mr. Wyley.

### 5. ZYGOPHYLLUM, Linn.

Calyx 4-5-parted, persistent or deciduous, imbricate. Petals 4-5, clawed, twisted, imbricate. Stamens 8-10; filaments subulate, with an entire bifid or tripartite scale at base. Disk fleshy, 8-10-angled. Ovary 4-5-angled or lobed, 4-5-celled; ovules 2 or more; stylê furrowed, continuous with the ovary; stigma minute. Capsules 4-5-angled or winged, 4-5-celled, few- or several-seeded.—*Fl. Cap. i. p. 355.*

Small shrubs or half-shrubs. Leaves fleshy or membranous, simple or bifoliolate; stipules membranous or spinous. Flowers solitary, white or yellow.—25 Cape species.

### 6. SEETZENIA, R. Br.

Calyx 5-parted, valvate. Petals 0. Stamens 5, opposite the calyx-segments; filaments subulate, naked; anthers introrse, 2-celled, subglobose-didymous. Ovary oblong, 5-celled; ovules solitary; styles 5, terete, reflexed; stigmas capitate. Capsules ovoid, 5-coccous, the cocci separating from a central 5-angled axis.—*Fl. Cap. i. p. 365.*

A woolly or glabrous, Clanwilliam, etc., half-shrub, with jointed branches, trifoliolate leaves, intrapetiolar stipules, and axillary, 1-flowered peduncles.

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## ORDER XXVIII. GERANIACEÆ.

Flowers bisexual, regular or irregular. Sepals 5, rarely fewer, mostly separate and imbricate, the upper ones sometimes spurred. Petals 5 or fewer or 0, imbricate or twisted in bud. Torus commonly with 5 glands alternating with the petals, usually prolonged through the centre of the ovary. Stamens 5-10-15 or fewer by abortion; filaments mostly connate at base, rarely free; anthers versatile, 2-celled. Ovary 3-5-lobed, 3-5-celled, rarely 2-celled; carpels united to the axis below, above either prolonged into a beak, continued into a style, or beakless, with free or partially united styles, or crowned with sessile stigmas. Ovules 1, 2 or many, axile. Fruit rarely indehiscent. Seeds with or without albumen; embryo straight or curved, often green.—Herbs or shrubs of various aspects.

Tribe 1. OXALIDÆ. Flowers regular. Petals convolute. Stamens 10, connate at base. Ovary beakless. Styles 5, separate; stigmas capitate. Capsules many-seeded. Leaves compound, without stipules.

Usually trifoliolate herbs . . . . . 1. OXALIS.

Tribe 2. GERANIÆ. Flowers regular or irregular. Sepals unequal, strongly imbricate. Stamens 5-7-10-15, monadelphous or polyadelphous. Ovary beaked, the beak prolonged into a style; stigmas 5, linear. Carpels 1-seeded, tailed. Leaves mostly simple, variously cut or multifid, stipulate.

Flowers regular.

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|--|-----------------|
| Stamens 15, in parcels of 3 each . . . . . | 2. MONSONIA.    |
| Stamens 15, monadelphous . . . . .         | 3. SARCOCAULON. |
| Stamens 10, monadelphous . . . . .         | 4. GERANIUM.    |
| Stamens 5, monadelphous . . . . .          | 5. ERODIUM.     |

Flowers irregular. Stamens 7 or fewer. Petals  $\frac{3}{2}$ , or the lower absent; back sepal tubular at base, the tube connate with the pedicel . . . . . 6. PELARGONIUM.

Tribe 3. BALSAMINÆ. Flowers irregular. Sepals coloured, very unequal, the posterior spurred, two anterior very small or none. Petals hypogynous. Stamens 5, short. Ovary beakless; stigma sessile. Capsules bursting with elasticity.

Herbs . . . . . 7. IMPATIENS.

## TRIBE 1. OXALIDÆ.

### 1. OXALIS, Linn.

Sepals 5, free or united at base. Petals 5, convolute, their claws conniving into a funnel-shaped tube. Stamens 10, connate at base, 5 alternate shorter. Ovary 5-lobed, 5-celled, beakless; ovules few or many; styles 5, filiform; stigmas capitate or pencilled. Capsules deeply 5-lobed, globose or oblong; seeds 1 or several, albuminous.—*Fl. Cap. i. p. 313.*

A cosmopolitan genus, particularly abundant in the southern hemisphere. Leaves compound; leaflets rarely 1 or 2, commonly 3, sometimes many and digitate. Flowers red purple white yellow or streaked.—There are (at least) 108 Cape species, all herbaceous, and most of them bulb-rooted; they blossom in the winter and early spring months.

## TRIBE 2. GERANIÆ.

### 2. MONSONIA, Linn. f.

Sepals equal at base, mucronate. Petals spreading equally, longer than the calyx. Stamens 15, connate at base and spreading in 5 parcels, each of 3 stamens, whose filaments cohere for half their length. Ovary 5-lobed, beaked; ovules solitary.—*Fl. Cap. i. p. 254.*

Annual or perennial, herbaceous or half-shrubby plants, with slender stems. Leaves simple, subentire, toothed, or deeply-lobed or cut. Peduncles 1-2, or umbellately several-flowered.—8 Cape species, dispersed.

### 3. SARCOCAULON, DC.

Sepals equal at base, mucronate. Petals spreading equally. Stamens 15, connate at base; filaments subulate, not cohering in parcels.—*Fl. Cap. i. p. 256.*

Divaricately-branched, fleshy or succulent, rigid shrubs, armed with spines formed from persistent and hardened petioles. Leaves obovate or orbiculate, entire or crenate. Peduncles 1-flowered.—3 species: in the Northern, North-Western, and North-Eastern districts.

#### 4. GERANIUM, Linn.

Sepals equal at base. Petals spreading equally. Stamens 10, all perfect, the alternate longer. Glands at the base of the longer stamens.—*Fl. Cap.* i. p. 257.

A cosmopolitan genus.—5 Cape species, all slightly suffruticose. Slender perennials, with palmately-lobed or cut and multifid, long-petioled leaves. Peduncles 1-2-flowered, opposite the leaves or in the forks of the branches.

#### 5. ERODIUM, L'Her.

Sepals equal at base. Petals spreading equally. Stamens 5, perfect, bearing anthers; 5 sterile, subulate or obsolete. Glands at the base of the sterile stamens.—*Fl. Cap.* i. p. 259.

Herbs, rarely undershrubs. Leaves simple, either pinnatipartite, pinnatifid, cut or digitately parted. Peduncles mostly umbellately several-flowered.—5 Cape species, of which 2 are endemic, 3 probably of European origin.

#### 6. PELARGONIUM, L'Her.

Calyx 5-parted, the upper segment produced at base into a slender nectariferous tube, which is decurrent along the pedicel and adnate to it. Petals 5, rarely but 4 or 2, more or less unequal. Filaments 10, unequal, monadelphous; 2-7 bearing anthers, the rest abortive.

A large genus, chiefly South African.—About 163 Cape species, distributed under the following sections:—

1. HOAREA. Stemless, with tuberous roots. Petals 5 or 4.

2. SEYMOURIA. Stemless, with tuberous roots. Petals 2.

3. POLYACTIUM. Caulescent, with tuberous roots. Leaves lobed or pinnatipartite. Umbels many-flowered. Petals subequal, obovate, entire or multifid.

4. OTIDIA. Stem succulent and knobby. Leaves fleshy, pinnately or bipinnately cut. Petals subequal, the upper eared at base.

5. LIGULARIA. Stem either succulent or slender and branching. Leaves rarely entire, mostly much cut or pinnatisect. Petals rather unequal, spatulate, the upper tapering at base.

6. JENKINSONIA. Shrubby or succulent. Leaves palmately-nerved or lobed. Two upper petals on long claws, very much larger than the lower. Stamens 7.

7. MYRRHIDIUM. Slender, suffruticose or annual. Leaves pinnatisect. Petals 4 (rarely 5), two upper largest. Calyx segments membranous, strongly ribbed and mucronate or taper-pointed.

8. PERISTERA. Herbaceous, diffuse, annual or perennial. Leaves lobed or pinnatifid. Flowers minute. Petals scarcely longer than the calyx. (Habit of *Geranium* or *Erodium*.)

9. CAMPYLIA. Stem short, subsimple. Leaves on long petioles, undivided, entire or toothed. Stipules membranous. Flowers on long pedicels.



Two upper petals broadly obovate, three lower narrow. Fertile stamens 5, two of the sterile ones recurved.

10. *DIBRACHYA*. Much branched, with weak jointed stems. Leaves peltate or cordate-lobed, fleshy. Petals obovate. Stamens 7, the two upper very short.

11. *EUMORPHA*. Slender, suffruticose or herbaceous. Leaves on long petioles, palmately 5-7-nerved, reniform, lobed or palmatifid. Petals unequal, the 2 upper broad. Stamens 7.

12. *GLAUCOPHYLLUM*. Shrubby. Leaves fleshy, simply or ternately compound, the lamina articulated to the petiole. Stamens 7.

13. *CICONIUM*. Shrubby, with fleshy branches. Leaves either obovate or cordate-reniform, palmately many-nerved, undivided. Petals all of one colour, scarlet pink or white. Stamens 7, 2 upper very short.

14. *CORTUSINA*. Caudex short, thick, and fleshy; branches (if any) slender and half-herbaceous. Leaves reniform or cordate, lobulate, on long petioles. Petals subequal, 2 upper broader. Stamens 6-7.

15. *PELARGIUM*. Much-branched shrubs or undershrubs, not fleshy. Leaves entire or lobed (never pinnatifid). Stipules free. Inflorescence frequently paniced, the partial peduncles umbellate. 2 upper petals longer and broader than the lower. Stamens 7.

### TRIBE 3. BALSAMINÆ.

#### 7. *IMPATIENS*, Linn.

Flowers irregular. Sepals 3, rarely 5, coloured, imbricate, the two lateral flat, the two anterior, when present, small, the hinder one very large, produced at base into a hollow spur. Petals 3, the anterior concave, the lateral 2-fid. Glands 0. Stamens 5; filaments short, flat; anthers conniving round the pistil. Ovary oblong, 5-celled; stigma sessile, 5-toothed or lobed; ovules many. Capsules 5-valved, the valves bursting with elasticity and falling off. Seed exalbuminous.—*Fl. Cap.* i. p. 312.

A large genus, chiefly from tropical Asia.—1 Cape species (perhaps 2?), found in the Eastern district and at Natal.

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## ORDER XXIX. *RUTACEÆ*.

Flowers bisexual (or rarely unisexual), mostly regular. Sepals 4-5, imbricate. Petals 4-5. Stamens inserted at the base or on the margin of the torus, as many or twice as many as the petals, rarely fewer or more numerous, free or rarely united into a tube. Disk between the stamens and ovary, annular or expanded. Carpels 4-5, rarely more or fewer, united into a 2-5-lobed or solid ovary; styles either free or united into one, long or short; ovules 2 in each cell. Fruit various, capsular or berried; seeds with or without albumen.—Trees or shrubs, rarely herbs, gland-dotted and strongly scented. Habit various.

Leaves simple.

Flowers bisexual, 5-parted.

Ovary stipitate. Fruit a rough, 5-celled capsule . . . . . 1. CALODENDRON.

Ovary sessile. Fruit of 3-5 separate cocci.

Staminodia 0.

Petals clawed, bearded on the limb.

Style short; stigma capitate . . . . . 2. EUCHÆTIS.

Style long, much protruded . . . . . 3. MACROSTYLIS.

Petals sessile, not bearded . . . . . 4. DIOSMA.

Staminodia 5, one between each stamen.

Style short; stigma capitate.

Petals channelled, the staminodia infolded  
in the channel . . . . . 5. COLEONEMA.

Petals flat; staminodia free.

Petals clawed, the claw bearded . . . . . 6. ACMADENIA.

Petals subsessile, broad, nude . . . . . 7. ADENANDRA.

Style as long as petals; stigma simple.

Petals sessile. Flowers axillary . . . . . 8. BAROSMA.

Petals clawed. Flowers terminal . . . . . 9. AGATHOSMA.

Flowers unisexual, 4-parted; carpels solitary.

Petals 0. Leaves lanceolate, dotted . . . . . 10. EMPLÉURUM.

Petals 4. Leaves acicular, not pellucid, dotted . . . . . 11. EMPLÉURIDIUM.

Leaves trifoliolate . . . . . 13. TODDALIA.

Leaves abruptly pinnate; ovary lobed . . . . . 12. ZANTHOXYLON.

Leaves unequally pinnate; ovary solid . . . . . 14. CLAUSENA.

## TRIBE 1. DIOSMEÆ.

### 1. CALODENDRON, Th.

Calyx short, 5-parted, deciduous. Petals 5, oblongo-lanceolate, much longer than the calyx. Stamens 10, inserted under a short, tubular disk, 5 fertile, 5 alternate (staminodia) sterile and petaloid. Ovary stipitate, shortly 5-lobed; style filiform, elongate. Capsules stipitate, ligneous, roughly tubercled, 5-angled, 5-celled, septicidally 5-valved; seeds 2 in each cell, angular.—*Fl. Cap.* i. p. 371.

*C. Capense*, Th., is a noble tree, a native of the Eastern district and Natal. Leaves decussate, petioled, ovate or ovato-lanceolate, acute or obtuse, pellucid-dotted, evergreen, 4-5 inches long. Flowers in terminal panicles; petals white, with purple, glandular spots. The "Wilde Kastanien" of colonists.

### 2. EUCHÆTIS, Bartl. and Wendl.

Calyx 5-parted. Petals broadly clawed, oblongo-lanceolate, with a transverse beard. Stamens 5, fertile, shorter than the calyx; anthers rounded, with an apical gland; staminodia 0. Ovary deeply sunk in the cup-shaped, 5-lobed disk, 5-lobed; style short; stigma capitate. Fruit of 5 cocci, shortly horned at the summit.—*Fl. Cap.* i. p. 371.

Small, slender shrubs, with scattered, rarely opposite, lanceolate, keeled

leaves, and terminal, capitate or glomerate flowers.—5 species from the Western and Midland districts.

### 3. MACROSTYLIS, B. and W.

Calyx 5-parted. Petals clawed, spatulate, bearded in the middle. Stamens 5, fertile, exserted; staminodia 0; anthers roundish, with a minute, apical gland. Disk closing over the ovary, perforated by the style. Ovary deeply 3-5-lobed; style lengthening after flowering, slender at base; stigma obtuse. Cocci 3-5, horned.—*Fl. Cap.* i. p. 441.

Small bushes, with alternate or opposite, short, nerve-keeled leaves, pellucid-dotted along the margin and nerve. Flowers small, white or rosy, subumbellate at the end of the twigs.—8 species, natives of the Western district.

### 4. DIOSMA, Linn.

Calyx 5-parted. Petals sessile, obovate, longer than the calyx, nude (not bearded). Stamens 5, fertile, shorter than the petals; staminodia 0; anthers roundish, with a sessile, apical gland. Disk fleshy, 5-lobed, cup-like. Ovary sunk in the disk, small, deeply 5-lobed; style short; stigma capitate. Cocci 5, longer than the calyx, rough, horned at the summit.—*Fl. Cap.* i. p. 373.

Small shrubs, with alternate or opposite, linear-acute, channelled, serrulate or ciliate, gland-dotted leaves; and white or reddish, terminal, solitary or corymbose flowers.—11 species, all (except *D. vulgaris*, which is everywhere) found in the Western district.

### 5. COLEONEMA, B. and W.

Calyx 5-parted. Petals obovate, twice as long as the calyx, tapering at base into a channelled claw. Stamens 5, fertile, equalling the sepals; anthers roundish, tipped with a sessile gland; staminodia 5, filiform, nude, enclosed within the channels of the petals. Disk cup-like, crenate. Ovary deeply 5-lobed; style short; stigma capitate. Cocci 5, compressed, rough, shortly horned at the summit.—*Fl. Cap.* i. p. 377.

Shrubs with scattered, linear leaves. Flowers axillary, solitary, white or purple.—4 species, 3 of which are chiefly Western.

### 6. ACMADENIA, B. and W.

Calyx 5-parted. Petals clawed, the claw bearded within (except in *A. psilopetala*). Stamens 5, fertile, equalling the claws of the petals; anthers ovate or oblong, tipped with an erect, sessile, conical gland; staminodia filiform, short or obsolete. Disk cup-like, entire or 5-crenate. Ovary 4-5-lobed, sunk in the disk; style short; stigma capitate. Cocci 4-5, compressed, horned at the apex.—*Fl. Cap.* i. p. 379.

Small shrubs, with imbricate (rarely scattered), linear, oblong or roundish leaves. Flowers terminal, either solitary or few together, rarely in many-flowered heads.—14 species, chiefly in the South-Eastern district.

### 7. ADENANDRA, Willd.

Calyx 5-parted. Petals broadly obovate, with very short claws, nude. Stamens 5, fertile, shorter than the calyx; anthers oblong, erect, tipped with a stalked, spoon-shaped or globose, at length reflexed gland; staminodia also tipped with a gland. Disk cup-like, 5-10-crenate. Ovary sunk in the disk, 5-lobed; style short; stigma capitate, 5-crenate. Cocci obtuse or horned, glandularly-muricate above.—*Fl. Cap.* i. p. 384.

Virgate or much-branched shrubs, with scattered, rarely opposite, pellucid-dotted leaves, and terminal, sessile or pedicellate flowers, which are larger and handsomer than in the allied genera.—21 species, natives of the Western and South-Eastern districts.

### 8. BAROSMA, Willd.

Calyx 5-cleft or parted. Petals much longer than the calyx, oblong, subsessile. Stamens 5, fertile, longer than the petaloid or filiform staminodia, which alternate with them; anthers ovoid, glandless or with a minute apical gland. Disk cup-like, entire or lobed. Ovary 5-lobed; style long, filiform; stigma simple. Cocci eared at apex, gland-dotted.—*Fl. Cap.* i. p. 392.

Small shrubs, with mostly opposite leaves, gland-serrated. Flowers on axillary twigs, solitary or tufted; very rarely subumbellate and terminal.—15 species, among which is *B. crenulata*, Hook., the true "*Buku*," though others are indiscriminately collected for it, particularly *B. serratifolia*, W.

### 9. AGATHOSMA, Willd.

Calyx 5-parted, rather unequal. Petals longer than the calyx, clawed. Stamens 5, fertile, alternating with as many filiform or petaloid staminodia; anthers subglobose. Disk cup-like, crenulate or lobed. Ovary 2-4-lobed; style long, filiform; stigma simple. Cocci mostly 3, horned.—*Fl. Cap.* i. p. 399.

A large genus of small shrubs, with alternate, rarely opposite leaves. Flowers at the ends of the branches, capitate or umbellate; in one species axillary. Petals white red or lilac-purple.—100 (or more) species, dispersed.

### 10. EMPLEURUM, Soland.

Flowers monœcious. Calyx 4-cleft. Petals and disk 0. Stamens 4; anthers large, 4-sided, the cells divergent and prolonged beyond the sessile, apical gland. Ovary of 1, rarely 2 carpels; style short; stigma simple. Fruit lanceolate, compressed, tapering upwards into a beak.—*Fl. Cap.* i. p. 441.

*E. serrulatum*, Ait., is a 2-3 feet high shrub, with close-set, lanceolate, 1-2 inches long, gland-serrate leaves. Male and female flowers on different branches, axillary. It is found as far east as Uitenhage, at least.

### 11. EMPLEURIDIUM, Sond.

Flowers dioecious. Calyx 4-parted, persistent; the sepals acute, imbricate. Petals 4, deciduous, sessile, ovate-rotund, inserted under the edges of a fleshy, 4-lobed disk.—Male: Stamens 4, on the margin of the disk; filaments subulate, short; anthers didymous, glandless. An abortive ovary.—Female: Ovary (not seen). Capsules oblong, follicular, opening at the side, and tipped with a short, persistent style; seed solitary.—*Fl. Cap.* i. p. 442; *Thes. Cap.* t. 77.

*E. juniperinum*, S. and H., is a small undershrub, found by Ecklon, near Caledon. It is not gland-dotted in any part. Leaves scattered, acicular, 6-12 lines long,  $\frac{1}{2}$  line wide, scabrous on the margin and keel. Flowers axillary, very minute.

### TRIBE 2. ZANTHOXYLÆ.

### 12. ZANTHOXYLON, Linn.

Flowers polygamous. Calyx 4-(3-5-)parted, small. Petals hypogynous, as many as the calyx lobes, imbricate.—Male: Stamens as many as petals, alternating with them; filaments free, subulate. A rudimentary ovary.—Female: Stamens 0 or abortive. Carpels 1-5 on a fleshy disk, separate or subcoherent; ovules 2 in each carpel; styles terminal, cylindrical, short or long; stigma capitate. Capsules leathery, 1-5, sessile or stipitate, 2-valved, 1-2-seeded; seeds black and shining.—*Fl. Cap.* i. p. 445.

Trees and shrubs of both hemispheres, armed with very large and strong thorns on the branches and stem, and often with prickles on the petioles and leaves. Leaves in our species abruptly pinnate, dotted. Flowers small, paniced.—3 Cape species, all Eastern.

### TRIBE 3. TODDALIÆ.

### 13. TODDALIA, Juss.

Flowers polygamous. Calyx short, 2-5-toothed, lobed or parted. Petals 2-5, imbricate or valvate. Torus inconspicuous or slightly elongate.—Male: Stamens 2, 4, 5 (or 8, those opposite the petals abortive), inserted at the base of the torus; filaments subulate; anthers oblong. A rudimentary, simple, or 4-lobed ovary.—Female: Ovary ovoid, oblong or globose, sessile or substipitate, 2-7-celled, very rarely 1-celled; style short or 0; ovules 2. Fruit leathery or fleshy, dotted, subglobose, 2-7-celled.—*Fl. Cap.* i. p. 446. *Also* Vepris, *Comm.*, *Fl. Cap.* i. p. 447.



Shrubs, unarmed or aculeate. Leaves alternate, 3-foliate, dotted. Flowers small, in cymes or panicles.—3 species, 1 from the Eastern district, 2 from Natal.

#### TRIBE 4. AURANTIEÆ.

##### 14. **CLAUSENA**, Burm.

Calyx 4-5-lobed or parted. Petals 4-5, free, mostly delicate, elliptical or roundish, imbricate. Stamens 8-10, free, the alternate shorter; filaments dilated at or below the middle, and often concave, subulate above; anthers short. Disk stipe-like. Ovary 4-5-(rarely 2-3)-celled, stipitate; style mostly distinct, at length deciduous; stigmas obtuse, entire or lobed; ovules 2, collateral or superposed. Berry ovoid, oblong or globose, 2-5-celled (or abortively 1-celled), few- or 1-seeded. Seed with a membranous coat, and no albumen.—*Fl. Cap. i. p. 444 (under Myaris, Pr.)*.

Trees chiefly Asiatic. Leaves imparipinnate; leaflets membranous, entire or crenulate, sometimes oblique. Panicles terminal or axillary; flowers small, white. *C. inæqualis*, Oliv., our only species, is common in the Eastern district and at Natal.

#### ORDER XXX. **OCHNACEÆ**.

Flowers bisexual, regular. Sepals 4-5-6, rigid, persistent, imbricate. Petals as many, rarely twice as many, deciduous, sessile. Torus enlarged after flowering, never annual or glandular. Stamens definite or indefinite; filaments short; anthers long, erect, opening by pores or slits, hard and dry. Ovary 2-10-lobed (or elongate, 1-10-celled); style simple, subulate. Fruit of 2 or more drupes (or capsular).—Trees or shrubs, with watery (not resinous) juice. Leaves alternate, stipulate, glabrous, coriaceous, shining, mostly serrulate.

##### 1. **OCHNA**, Schreb.

Sepals 5, coloured, persistent, imbricate. Petals 5-10, obovate or oblong, deciduous. Torus thick, lobed or elevated in the centre. Stamens many; anthers linear, basifixed, opening by short or long, terminal pores. Ovary deeply 3-10-lobed; styles connate, or partly free, central. Drupes 3-10, or fewer, sessile on the enlarged torus.—*Fl. Cap. i. p. 448*.

Chiefly tropical trees or shrubs. Flowers yellow; the calyx after flowering red or vinous-purple, brightening as the fruit advances. Leaves simple, shining, serrulate or subentire.—3 species, all natives of the Eastern district and Natal.

ORDER XXXI. **BURSERACEÆ.**

Flowers perfect or polygamous. Calyx 3-5-fid or parted, imbricate or valvate. Petals 3-5, deciduous. Disk annular or cup-like, free or adnate to the calyx tube. Stamens mostly twice as many as petals, on the margin or at base of the disk; anthers subglobose or oblong, versatile. Ovary 2-5-celled, often with a short style; ovules 1-2 in each cell. Fruit drupaceous, indehiscent, 2-5-celled.—Trees or shrubs, balsamiferous or oily. Leaves 3-foliolate or pinnate, rarely opposite, without stipules; leaflets very rarely pellucid-dotted. Flowers small, racemose or paniced.

Flowers on very short, 1-flowered peduncles . . . 1. **BALSAMODENDRON.**  
Flowers many, in a long peduncled panicle . . . 2. **PROTIUM.**

1. **BALSAMODENDRON**, Kth.

Flowers polygamous. Calyx urceolate or tubular, 4-toothed, persistent. Petals 4, suberect, linear-oblong, induplicate-valvate. Disk erect, cup-like. Stamens 8, on the margin of the disk, erect, free; the alternate shorter. Ovary girt by the disk, 2-3-celled, tapering into a short style; stigma 4-lobed. Drupe ovoid or globose, 1-3-celled.—*Fl. Cap.* i. p. 526.

Trees or shrubs. Leaves unequally pinnate; leaflets 3-5, sessile, dotless. Flowers on very short (1-2 lines long) peduncles, solitary or tufted. *B. Capense*, Sd.; on the North-Western frontier, near the Gariep.

2. **PROTIUM**, W. and A.

Calyx small, cup-like, 4-6-fid or toothed, valvate. Petals 4-6, erect or spreading, linear-oblong, valvate. Disk urceolate, covering the calyx-tube, margin free. Stamens 8-12, inserted under the margin of the disk, unequal, erect, free. Ovary girt at base by the small disk, ovate, 2-4-celled, tapering into a short style; stigma 3-4-lobed. Drupe fleshy, globose, 1-4-celled.—*Fl. Cap.* ii. p. 592.

Small, balsamaceous trees. Leaves toward the end of the twigs, 3-foliolate or imparipinnate; leaflets in few pairs, entire or denticulate. Panicles on long peduncles, diffusely branched. Flowers small.—Readily known from *Balsamodendron* by its inflorescence. *P. Africanum*, H., found near Durban, Natal, by Gerrard and M'Ken.

ORDER XXXII. **MELIACEÆ.**

Flowers regular, mostly perfect. Calyx short, 4-5-fid or parted, imbricate. Petals 4-5, longer than the calyx, twisted or imbricate, sometimes connate and valvate. Stamens 8-10 (rarely 5-16-20); filaments inserted outside a fleshy disk,

more or less united in a tube, which is entire or toothed at the apex; anthers sessile or subsessile on the staminal tube, included or exerted, erect, 2-celled. Disk various. Ovary free, 3-5-celled; style simple; stigma peltate. Ovules 2, collateral. Fruit a capsule, drupe or berry.—Trees or shrubs. Leaves alternate, exstipulate, mostly pinnatifid, in *Turræa* simple.

Leaves simple. Petals and staminal tube both very long 1. *TURRÆA*.

Leaves simply pinnate.

Fruit a dry, splitting capsule . . . . . 2. *TRICHILIA*.

Fruit a leathery, nearly juiceless, indehiscent, 2-5-celled

berry . . . . . 3. *EKEBERGIA*.

Leaves doubly pinnate. Fruit a drupe . . . . . 4. *MELIA*.

### 1. *TURRÆA*, Linn.

Calyx cup-shaped, 5-toothed. Petals 5, very long, strap-shaped, convolute in bud. Stamens 10, connate in a long tube, 10-toothed at the summit; anthers sessile between the teeth. Ovary sessile, 5-10-20-celled; style 1; stigma thickened. Capsules 5-celled, cells 2-1-seeded, the valves septiferous. Seeds compressed.—*Fl. Cap. i. p. 244*.

Shrubs, with alternate, simple leaves. Flowers on short twigs, solitary or tufted.—2 South African species, natives of the Eastern frontier and Natal.

### 2. *TRICHILIA*, Linn.

Calyx short, 4-5-toothed or cleft. Petals 4-5, erect or spreading, imbricate. Staminal tube 8-10-cleft or 8-10-parted, rarely entire, the segments linear, entire or 2-toothed, bearing anthers between or on the teeth; anthers erect, exerted. Disk annular. Ovary sunk in the disk, 2-3-celled; style long or short; stigma 2-3-lobed. Capsules coriaceous, 2-3-celled, 2-3-valved.—*Fl. Cap. i. p. 246; Thes. Cap. t. 76*.

Trees or shrubs, chiefly American. Leaves pinnate. Flowers in axillary panicles.—3 South African species, all found near Natal.

### 3. *EKEBERGIA*, Sparm.

Calyx short, 4-5-fid; the lobes obtuse, imbricate. Petals 4-5, scarcely longer than the calyx, elliptical or oblong, imbricate in bud. Stamens 10, united in a short, campanulate, 10-toothed tube; the teeth bearing anthers. Ovary 4-5-celled, girt by an annular disk; style short, thick; stigma obsoletely lobed. Berry dry, leathery, globose, 4-5-celled, 1-5-seeded. Seeds arillate.—*Fl. Cap. i. p. 246*.

*E. Capensis*, Sp., the only species, is a handsome, ash-like tree, native of the Eastern district, Caffraria, and Natal.

4. **MELIA**, Linn.

Calyx small, 5-fid. Petals 5, linear-oblong, spreading, convolute in bud. Stamens 10, the filaments connate into a 20-toothed tube, the anthers sessile within the throat of the tube. Ovary on a raised torus, 5-celled; style filiform; stigma 5-angled. Drupe with a 5-furrowed and 5-celled bony stone.—*Fl. Cap.* i. p. 245.

*M. Azedarach*, Linn., the "Cape Lilac," or "Pride of China," is cultivated throughout the colony, and partly naturalized.

ORDER XXXIII. **CHAILLETIACEÆ**.

Flowers bisexual or unisexual. Sepals 5, free or connate, coriaceous, imbricate. Petals 5, inserted at the base of the calyx, and rather longer, free and equal or connate and unequal, with broad claw and narrow 2-fid limb, tipped by an inflexed process, which is connate with the margins of the lobes of the petals. Stamens 5, inserted with the petals, alternating with the lobes of the disk or with hypogynous glands; anthers oblong, 2-celled. Hypogynous glands 5, scale-like. Ovary free, 2-3-celled; ovules in pairs, pendulous; styles 2-3, free or partly united. Fruit drupaceous.—Trees or shrubs, chiefly tropical.

1. **CHAILLETIA**, DC.

Calyx 5-parted. Petals separate, broad-clawed, deeply 2-parted or 2-fid. Stamens 5, equal; anthers oblong, the connective thickened. Hypogynous glands 5, opposite the petals, distinct or united in a 5-lobed disk. Ovary subglobose; styles 1-3, free or connate, short or long and slender. Drupe leathery, dry, 1-2-celled.—*Fl. Cap.* i. p. 450.

Chiefly tropical. *C. cymosa*, Hk. Ic. t. 591, our only South African species, is a very dwarf, little branched, leafy, villous shrub. Leaves 3-4 inches long, 6-10 lines wide, alternate, crowded, narrow-oblong, obtuse, glabrous and netted-veined. Cymes shorter than the leaves. Found at Aapjes river, by Burke and Zeyher.

ORDER XXXIV. **OLACINEÆ**.

Flowers regular, perfect or unisexual. Calyx small, 4-5-toothed, lobed or parted. Petals 4-5, free or connate in a monopetalous corolla, valvate or minutely subimbricate. Stamens 4-10, inserted with the petals and often more or less adnate to them; filaments mostly free; anthers 2-celled. Disk annular or 4-5-divided. Ovary free, 1-celled (or spuri-

ously 3-5-celled) ; ovules 2-4, rarely 1, pendulous from the summit of a thread-like, free, central placenta, or attached to the sides of the ovary, or of the false septa ; style simple. Fruit in the unaltered or enlarged calyx, 1-celled, 1-seeded. Seed with much albumen.

Petals 4-5, hairy within. Stamens 8-10 . . . . . 1. XIMENIA.  
 Petals 4-5, glabrous. Stamens 4-5 . . . . . 2. APODYTES.  
 Corolla rotate (monopetalous), bearing the stamens . . . 3. CASSINOPSIS.

### 1. XIMENIA, Linn.

Calyx small, 4-5-toothed, unchanged in fruit. Petals 4-5, hypogynous, valvate, narrow, bearded within. Stamens twice as many ; anthers linear, erect, opening by opposite slits. Ovary 3-celled at base ; style simple ; ovules 3, linear, pendulous from a central placenta, which is free at summit, or attached to the wall of the cavity. Drupe fleshy.—*Fl. Cap. i. p. 235 ; Thes. Cap. t. 126.*

*X. Caffra*, Sond., our only South African species, grows at Magalisberg and Natal.

### 2. APODYTES, E. Mey.

Calyx small, 4-5-toothed, unchanged in fruit. Petals 4-5, hypogynous, free, valvate, glabrous. Stamens 4-5, alternate with the petals and slightly attached to them at base ; filaments thickish ; anthers oblong or linear, dorsally affixed. Ovary 1-celled, often thickened on one side at the apex ; style oblique or excentric ; ovules 2, superposed, pendulous from an adherent placenta. Drupe fleshy, oblique, compressed, with a protuberance on one side.—*Fl. Cap. i. p. 235.*

Trees or shrubs. *A. dimidiata*, E. M., the only Cape species, occurs chiefly in the Eastern district, Caffraria, and Natal. It turns blackish in drying. Leaves ovate-oblong, glossy above, very entire. Flowers minute, in terminal, much-branched panicles.

### 3. CASSINOPSIS, Sond.

Calyx 5-fid. Corolla rotate, 5-fid, the segments oblong, slightly imbricate in bud. Stamens 5, inserted at the base or in the throat of the corolla, alternating with its lobes ; filaments subulate ; anthers oblong-cordate, 2-celled. Disk 0. Ovary sessile, 1-celled, 2-1-ovuled ; ovules superposed, pendulous from the apex of the cavity. Drupe nearly dry, ovato-globose. Seed inverted, compressed ; embryo minute, in the apex of copious albumen.—*Fl. Cap. i. p. 473 ; Thes. Cap. t. 168.*

Shrubs or small trees, with opposite, entire or toothed, petioled leaves, and axillary cymes of minute flowers.—2 South African species : *C. Capensis*, Sond., found throughout the Eastern district and in Caffraria ; *C. tinifolia*, H., found in Zululand.



ORDER XXXV. **ILICINEÆ.**

Flowers regular, bisexual. Calyx 3-6-parted, imbricate. Petals 4-5, rarely more, free or combined in a rotate corolla, hypogynous, deciduous, imbricate. Stamens as many as the petals, free or attached to the base of the corolla; filaments subulate; anthers introrse. Disk 0. Ovary free, 3-5- or many-celled; style 0 or terminal; ovules 1-2, pendulous. Fruit a fleshy drupe, containing 3-18 bony, 1-seeded cells.—Trees or shrubs, mostly evergreen, with shining leaves.

1. **ILEX**, Linn.

Flowers perfect. Calyx small, 4-6-toothed, persistent. Corolla rotate, 4-6-parted, the segments obtuse, imbricated. Stamens alternate with the lobes of the corolla; filaments subulate; anthers introrse, erect. Ovary sessile, 4-6-celled; ovules 1-2, pendulous; stigmas 4-6, sessile. Drupe fleshy, subglobose, crowned with the stigmas.—*Fl. Cap.* i. p. 473.

Evergreen shrubs or trees, widely dispersed. *I. Capensis*, our only species, found throughout the colony, is a large shrub or small tree, with oblong or lanceolate, shining, entire leaves, and axillary, fascicled, white flowers.

ORDER XXXVI. **CELASTRINEÆ.**

Flowers mostly bisexual. Calyx small, 4-5-lobed or parted, imbricate, persistent. Petals 4-5, short, spreading, sessile under the margin of the disk, imbricate. Stamens 3-5 (rarely 2-10), inserted at the base, on the margin, on the surface, or on the lobes of the disk; filaments mostly short; anthers 2-celled. Disk conspicuous, convex or expanded or lobed. Ovary sessile on or partly immersed in the disk, 3-5- (rarely 1-) celled; style short, simple or 2-3-fid; ovules commonly 2, mostly erect, rarely pendulous. Fruit a capsule drupe or berry, or winged (*samara*); seeds with or without albumen.—Trees and shrubs, often spinous. Leaves opposite or alternate, mostly leathery, simple. Flowers axillary, small.

Tribe 1. **CELASTRÆE.** Stamens inserted on or beneath the margin of a conspicuous, fleshy disk. Anthers introrse.

Fruit capsular, dehiscent.

Leaves alternate.

Ovules about 6 in each ovarian cell . . . . 1. **PUTTERLICHIA.**

Ovules 2 in each ovarian cell.

Valves of capsule not winged . . . . 2. **GYMNOSPORIA.**

Valves of capsule dorsally winged . . . . 3. **PTEROCELASTRUS.**

Leaves opposite.

Ovary 3-celled; ovules in pairs, erect . . . 4. CATHA.

Ovary 1-celled; ovules 6-8, parietal . . . 5. CATHASTRUM.

Fruit a fleshy, indehiscent drupe.

Ovules solitary, erect. Leaves opposite . . . 6. HARTOGIA.

Ovules in pairs, pendulous. Leaves opposite . . 7. MAUROCENIA.

Ovules in pairs, erect.

Stamens 4. Ovary 2-celled. Leaves opposite . . 8. LAURIDIA.

Stamens 5. Ovary 3-celled. Leaves opposite

or alternate . . . . . 9. ELEODENDRON.

Tribe 2. HIPPOCRATEÆ. Stamens 3 (rarely 2-4-5), inserted much within the margin of the disk; filaments flat; anthers extrorse.

Fruit a 1- or several-seeded berry. Seeds wingless. 10. SALACIA.

### TRIBE 1. CELASTRÆ. (Gen. 1-9.)

#### 1. PUTTERLICHIA, Endl.

Calyx flat, 4-5-parted. Petals 4-5, spreading. Stamens 4-5, spreading, inserted under the margin of the disk; filaments subulate; anthers subglobose. Disk thick, hemispherical, ribbed. Ovary half-sunk in the disk, 3-5-angled, 3-5-celled; style 3-5-angled; stigma 3-5-lobed; ovules 6 in each cell, 2-seriate. Capsules obtusely 3-angled, 3-celled, loculicidally 3-valved; cells 3-6-seeded. Seeds with a fleshy arillus, albuminous.—*Celastrus*, *Sect. 1, in Fl. Cap. i. p. 453.*

Glabrous, spiny shrubs, with alternate or tufted, obovate leaves, and axillary, diffusely-branched cymes of white flowers.—There are 2 species, one of them dispersed, the other Eastern.

#### 2. GYMNOSPORIA, W. and A.

Calyx 4-5-fid or parted. Petals 4-5, sessile, spreading. Stamens as many, inserted on or under the margin of the disk. Disk widely spread, 4-5-lobed or crenate. Ovary very generally with a broad base confluent with the disk, 3-angled or pyramidal, 2-3-celled; style short; stigmas 3; ovules in pairs, erect. Capsules obovoid or subglobose, 3-angled or globose, 2-3-celled, 1-4-seeded. Seeds with or without an aril, albuminous.—*Celastrus*,\* *Sect. 2, Fl. Cap. i. p. 454.* Also *Scytophyllum*, *E. and Z. (which has dehiscent fruit), Fl. Cap. i. p. 471.*

A large genus of shrubs, often spinous. Leaves alternate, entire or toothed, sometimes pubescent. Flowers in axillary cymes or tufts.—Upwards of 20 South African species, dispersed.

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\* The true *Celastrus*, Linn., differs in having an ovary seated on, but not immersed in, the disk, and by other characters. Its species, about 18 in number, are chiefly Asiatic; a few American and Australian, and one from Madagascar. They are mostly climbing shrubs, without spines.

3. **PTEROCELASTRUS**, Meisn.

Floral characters nearly as in *Gymnosporia*. Capsules cartilaginous, 3-6-winged, 1-3-celled, loculicidally 3-valved, slowly dehiscing, the valves septiferous in the middle; cells 1-2-seeded. Seeds with a thin, membranous arillus, albuminous.—*Fl. Cap.* i. p. 461.

South African shrubs, with alternate, leathery, quite entire leaves and axillary, small, white, cymose or tufted flowers.—6 species, dispersed.

4. **CATHA**, Forsk.

Calyx 5-lobed, small. Petals 5, erecto-patent. Stamens 5, on the margin of the disk; filaments subulate; anthers 2-parted. Disk thin, with an undulate margin. Ovary ovoid, immersed in the disk, free, 3-celled; style short, thick; stigmas 3; ovules in pairs, erect. Capsules linear-oblong, 3-celled, 3-valved, 1-3-seeded. "Ripe seeds winged."—*Methyscophyllum*, *Fl. Cap.* i. p. 463.

*C. edulis*, Forsk. (= *Methyscophyllum glaucum*. E. and Z.), the "Bosjesman's-thé" of the colonists, grows in North and South Africa and in Arabia. The leaves, chewed to excess, are intoxicating. Leaves opposite, glaucous, lanceolate, acuminate, repando-serrate, with revolute margins, netted-veined. Peduncles axillary, dichotomous, short.

5. **CATHASTRUM**, Turcz.

Calyx 5-parted, the lobes rounded, fimbriate. Petals 5, obovate, ciliolate, revolute. Stamens 5, inserted under the margin of the disk; filaments thickish, recurved; anthers subcordate, affixed to the broadish apex of the filaments. Disk thin, obtusely 5-angled. Ovary sessile on the disk, narrowed at base, oblique, free, 1-celled; style short, stigma thick, unilateral, peltate; ovules 4-8, in two rows, ascending.—*Fl. Cap.* i. p. 526.

*C. Capensis*, Turcz., the only species, is a glabrous shrub, with opposite, petioled, oblong or linear-oblong, leathery, obtuse, undulate, entire leaves, and short, axillary cymes of small flowers. The fruit is unknown. It inhabits woods in Uitenhage.

6. **HARTOGIA**, Thunb.

Calyx 4-5-fid. Petals 4-5, spreading. Stamens 4-5, between the lobes of the disk. Disk annular, 4-5-lobed. Ovary sessile, scarcely confluent with the disk, pyramidal, 2-3-celled, tapering into a thick style; stigma obtuse; ovules solitary in each cell, erect. Fruit ovoid, dry, indehiscent. Seed without albumen.—*Fl. Cap.* i. p. 464.

*H. Capensis*, Th., the only species, is a shrub with opposite, leathery glaucous leaves, with revolute, serrulate margins. Cymes axillary; flowers small, white. Found in the Western and middle districts.

## 7. MAUROCENIA, Linn.

Calyx minute, 5-parted. Petals 5, longer than the calyx. Stamens 5, under the margin of the disk, longer than the petals; filaments filiform; anthers broadly oblong. Disk cup-like, sinuate, 5-lobed. Ovary sessile on the disk, not confluent with it, ovoid, 2-3-celled; stigmas sessile, 2-3-lobed; ovules in pairs, pendulous. Drupe ovoid, fleshy, 1-3-celled. Seed albuminous.—*Fl. Cap.* i. p. 465. Cassine, *Linn., Benth. and Hook. f. Gen. Pl.* i. p. 363.

*M. Capensis*, Sond., the only species, is a glabrous shrub, with 4-angled twigs, opposite, leathery, quite entire, glossy leaves, and axillary short, cymules of small white flowers. It is frequent in the Western districts.

## 8. LAURIDIA, E. and Z.

Calyx 4-parted, the lobes strongly imbricate. Petals 4, ovate-oblong, revolute, with an uneven margin, imbricate. Stamens 4, on the margin of the disk; filaments broad-based, flattish, subulate; anthers broadly oblong. Disk adnate to the calyx-tube, the limb thin, obscurely lobed. Ovary subimmersed in the disk, 2-celled; style very short; stigma 2-lobed. Drupe rather dry, 2-celled, 1-2-seeded, with a crustaceous stone.—*Fl. Cap.* i. p. 468.

*L. reticulata*, E. and Z., the only species, is a glabrous, trichotomous shrub, with opposite, very entire, or sparingly toothed, netted-veined leaves, and axillary, paniculate-racemose, small flowers. It grows in the Eastern district.—As a genus, *Lauridia* scarcely differs from *Elæodendron*.

## 9. ELÆODENDRON, Jacq. f.

Flowers sometimes polygamous. Calyx 4-5-parted. Petals 4-5, spreading. Stamens 4-5, under the margin of the disk; filaments short, subulate; anthers subglobose. Disk thick, expanded, 4-5 sinuate-angled or lobed. Ovary pyramidal, confluent with the disk, mostly 3-angled, 3-celled, rarely 2-5-celled; style very short; stigma 2-5-lobed; ovules in pairs, erect. Drupe dry or pulpy, 1-3-celled. Seed albuminous.—*Fl. Cap.* i. p. 467. Also Cassine, *S. and H.*, p. 465, and *Mystroxydon*, *E. and Z., l. c.*, p. 469.

A considerable genus, of which there are about 18 Cape species, dispersed. Leaves opposite or alternate, entire or toothed, glabrous or pubescent, leathery, mostly evergreen. Peduncles axillary; flowers small.

## TRIBE 2. HIPPOCRATEÆ.

## 10. SALACIA, Linn.

Calyx small, 5-parted. Petals 5, spreading, imbricate. Stamens 3 (very rarely 2 or 4), inserted on the inner margin

of the disk, close to the ovary, free or connate with the ovary; filaments flattened, recurved; anthers mostly extrorse, 2-1-celled. Disk thick, flat or conical, sinuate. Ovary immersed in the disk, 3-celled, tapering into a short or longer style; stigma simple or 3-lobed; ovules 2, 4, or more, axile. Fruit berried, 1-3-celled; cells 1-4-seeded. Seed exalbuminous.—*Fl. Cap.* i. p. 230.

Trees or shrubs, often climbing.—1 South African species, found near Natal, with alternate leaves. Flowers in axillary tufts.

### ORDER XXXVII. RHAMNEÆ.

Flowers perfect, regular. Calyx-limb 4-5-fid, the lobes acute, valvate in bud. Petals 4, 5 or 0, inserted in the throat of the calyx, usually small, hood-shaped or flat. Stamens 4-5, inserted with the petals and opposite them. Disk perigynous (rarely 0), either thick, filling the calyx-tube, or annular, or cup-like, simple or lobed. Ovary sessile, free or more or less adnate to the calyx-tube; 3- rarely 2-4-celled; style erect, simple or cleft; ovules mostly solitary, erect. Fruit fleshy or capsular. Seeds mostly albuminous.—Trees or shrubs, often spiny, sometimes climbing. Leaves simple, alternate or opposite, often 3-5-nerved, or narrow-linear, 1-nerved. Flowers small, in axillary cymes or terminal, capitate.

Ovary quite free (not adhering to the calyx-tube).

Ovary sunk in and confluent with the flat, 5-angled disk . . . 1. ZIZYPHUS.

Ovary not sunk in or confluent with the disk.

Disk thin, lining the calyx-tube; styles 3-4 . . . 2. RHAMNUS.

Disk fleshy, filling up the calyx-tube, but not confluent with the ovary; style simple . . . 3. SCUTIA.

Ovary more or less adhering to the calyx-tube; fruit inferior or half-inferior.

An erect shrub, with expanded, penninerved, serrate leaves; flowers paniced, glabrous . . . 4. NOLTEA.

A climbing shrub, with expanded, penninerved, entire leaves; flowers in axillary cymes, glabrous . . . 5. HELINUS.

Small erect shrubs, with crowded, often linear, entire leaves, and flowers in heads or spikes, rarely paniced; calyx hairy . . . 6. PHYLICA.

#### 1. ZIZYPHUS, Juss.

Calyx 5-fid, the tube broadly obconic, the lobes ovate, spreading, keeled within. Petals 5, rarely 0, hood-shaped. Disk flat, 5-angled, the margin free. Stamens 5, exerted. Ovary immersed in the disk and confluent with it at base, 2- rarely 3-4-celled; styles 2-3, free or connate, divergent. Drupe fleshy, globose or oblong, 1-3-celled.—*Fl. Cap.* i. p. 475.



Shrubs or trees, often trailing, mostly armed with hooked prickles. Leaves alternate, petiolate, entire or crenate, 3-5-nerved. Cymes axillary, few-flowered.—3 South African species, from the Northern and Eastern districts.

## 2. RHAMNUS, Linn.

Calyx 4-5-fid; tube urceolate, the lobes triangular, erect or spreading, keeled within. Petals 4-5 or 0, hooded or flat. Stamens 4-5, with very short filaments. Disk clothing the whole calyx-tube, the margin thin. Ovary free, ovoid, hidden in the calyx-tube, 3-4-celled, tapering into a 3-4-lobed style. Drupe fleshy, oblong or globose, girt by the persistent base of calyx; stone 2-4-celled.—*Fl. Cap.* i. p. 476.

Shrubs or small trees. Leaves opposite, penninerved, entire or toothed. Flowers axillary, racemose or cymose.—2 South African species, natives of the Eastern district and Natal.

## 3. SCUTIA, Comm.

Calyx 5-fid, with a hemispherical or turbinate tube, the lobes ovate, thickened at the point, deciduous. Petals 5, clawed, erect, flat or hooded. Stamens 5. Disk filling up the tube of the calyx, the margin free, undulate. Ovary ovoid or globose, hidden in the disk, but not confluent with it, free, 2-4-celled, tapering into a short simple or 2-4-fid style. Drupe obovoid or subglobose, dry or sparingly fleshy, girt by the cup-like base of the calyx; stone 2-4-celled.—*Fl. Cap.* i. p. 477.

Glabrous, unarmed or spiny shrubs, often with angular twigs. Leaves approaching in pairs, but not strictly opposite, petioled, coriaceous, penninerved. Flowers in axillary tufts or umbels.—*S. Commersoni*, Br., the only South African species, is common in woods, from Swellendam to Natal.

## 4. NOLTEA, Rehb.

Flowers polygamous. Calyx 5-fid, the tube turbinate; lobes ovate, erect or recurved. Petals 5, cucullate, sessile. Stamens 5, equalling the petals. Disk thin, lining the calyx-tube, the margin inconspicuous. Ovary half-inferior, 3-lobed at summit, 3-celled, tapering into a 3-angled style. Drupe dry, obovoid, girt below the middle by the persistent and adherent calyx-tube, 3-lobed, the lobes dorsally keeled.—*Fl. Cap.* i. p. 478.

*N. Africana*, Rehb., the only species, grows wild in the Eastern district and at Natal; it is commonly cultivated throughout the colony. Leaves alternate, oblongo-lanceolate, serrated, penninerved, obtuse. Flowers small, white, in terminal or axillary panicles.

## 5. HELINUS, E. Mey.

Calyx-tube obconical, adhering to the ovary; limb 5-parted,

spreading, deciduous. Petals 5, hooded, inserted on the margin of the disk. Stamens 5, as long as petals. Disk epigynous, flattish, filling the calyx-tube. Ovary 3-celled; style 3-fid. Fruit inferior, coriaceous, obovate-globose, areolate at summit, 3-coccous; cocci crustaceous, dehiscing within.—*Fl. Cap. i. p. 478.*

Climbing, tendrilled shrubs, with slender, angular branches, and alternate, entire, cordate leaves. Flowers umbelled. *H. ovata*, E. Mey., grows on the Eastern frontier and at Natal.

## 6. PHYLICA, Linn.

Calyx-tube obconic, urceolate or cylindrical, adherent to the ovary, its limb 5-fid or parted; lobes hairy outside, mostly persistent. Petals wanting or bristle-shaped, or hooded. Stamens 5, short. Disk epigynous, and filling up the calyx-tube, distinct or inconspicuous. Ovary inferior, 3-celled; style short, rarely elongate, 3-fid. Fruit inferior, globose or ovoid, areolate, smooth or tomentose, with a leathery outer coat, 3-coccous within; cocci at length opening, on the inner face.—*Fl. Cap. i. p. 479.*

A large genus, chiefly South African. Small, much-branched shrubs, with alternate, crowded, entire, linear, lanceolate or rarely ovate leaves. Flowers in terminal, bracteate spikes or heads, rarely pedicellate, and either solitary or panicle.—58 South African species, dispersed.

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## ORDER XXXVIII. AMPELIDEÆ.

Flowers regular, perfect or unisexual. Calyx small, entire or 4-5-toothed or lobed. Petals 4-5, separate or cohering, valvate in bud. Stamens 4-5, opposite the petals, inserted at the base or between the lobes of the disk; filaments subulate; anthers introrse, 2-celled. Disk various. Ovary very commonly sunk in the disk, 2-6-celled; cells 1-2-ovuled; style single or 0. Fruit a berry. Seeds erect, with very hard, bony coats, and abundant fleshy albumen.—Mostly climbing or trailing shrubs, with knobbed or jointed stems. Leaves petioled, simple or compound. Flowers small, mostly green.

### 1. VITIS, Linn.

Calyx cup-like, 4-5-toothed. Petals 4-5, separate or cohering in a cap. Stamens 4-5. Ovary ovoid or sub-4-fid, 2-celled (very rarely 2-4-celled); style filiform or 0; ovules in pairs. Berry 1-2-celled; cells 1-2-seeded.—*Fl. Cap. i. p. 248.* Also *Cissus*, Linn.; *Fl. Cap. i. p. 249*; *Thes. Cap. t. 65.*

Cirrhose, mostly climbing or scrambling shrubs. Leaves simple or compound, rarely 2-pinnate; leaflets entire, serrate or cut. Stipules membra-

nous or 0. Peduncles opposite the leaves. Flowers small, cymose, paniced or spiked. The Grape Vine is the type of this genus.—There are about 18 South African species, all but *V. Capensis*, which is dispersed, natives of the Eastern district and Natal.

## ORDER XXXIX. SAPINDACEÆ.

Flowers regular or irregular, frequently polygamous. Sepals 4–5, free or connate, often unequal, imbricate, rarely valvate. Petals 0 or 3–5, imbricate. Disk various, rarely deficient, often unilateral. Stamens 8, rarely 5–10 (very rarely 2–4–12 or many), mostly hypogynous, inserted either within the disk, sometimes unilateral, straight or declined, or rarely round the base of the disk. Ovary entire or lobed, mostly 3-celled, or 1–4-celled; style simple or divided, terminal; ovules 1–2, rarely more in each cell, ascending. Fruit capsular or indehiscent, often pulpy within. Seeds rarely (in *Meliantheæ*) albuminous.—Trees and shrubs, rarely half-herbaceous. Leaves alternate, mostly pinnate, rarely simple.

Fruit membranous, inflated, 3–4-lobed and celled.

Fruit 3-lobed, the lobes dorsally winged.

Calyx 4-parted. Herbaceous, tendril-bearing climbers . . . . .

1. CARDIOSPERMUM.

Calyx 5-parted. An erect, rigid shrub . . .

2. ERYTHROPHYSA.

Fruit 4-lobed, the lobes sharply angled or winged.

Calyx 4-parted. Petals equal. Stamens 8, monadelphous . . . . .

8. AITONIA.

Calyx 5-parted, unequal. Petals unequal. Stamens 4, 2 long and 2 short . . . . .

9. MELIANTHUS.

Fruit fleshy or leathery. Carpels 2–3–4, not compressed or winged.

Sepals and petals 4. Ovary 2-lobed . . . . .

3. SCHMIDELIA.

Sepals and petals 5. Ovary 3–4-celled.

Stamens 8–10. Ovary 3-celled.

Ovary lobed. Fruit 3-coccous . . . . .

5. SAPINDUS.

Ovary undivided. Fruit drupaceous . . . . .

4. HIPPOBROMUS.

Stamens 5. Ovary bluntly 4-angled, 4-celled . . . . .

10. BERSAMA.

Fruit strongly compressed or winged, not inflated.

Petals 3. Stamens 5–8. Capsule 2–4-winged . . . . .

6. DODONÆA.

Petals 4. Stamens 4. Capsule oblong, compressed, 2-lobed at the apex. Seeds winged . . . . .

7. PTEROXYLON.

### TRIBE 1. SAPINDEÆ. (Gen. 1–5.)

#### 1. CARDIOSPERMUM, Linn.

Flowers irregular, polygamo-dicæious. Sepals 4, concave, imbricate, the 2 outer small. Petals 4, in opposite pairs, the 2 larger with a large scale, 2 smaller with a small crested scale at base. Disk unilateral, undulate, swelling into 2 glands opposite the lower petals. Stamens 8, excentric. Ovary ses-

sile or stipitate, 3-celled; style short, 3-fid; ovules solitary. Capsule 3-lobed; lobes inflated, membranous, veiny, loculicidally opening.—*Fl. Cap. i. p. 237.*

Much-branched, half-herbaceous climbers. Leaves 2-ternate or compound, the common petiole bearing tendrils. Flowers in axillary racemes or panicles.—*C. Halicacaba*, Linn., a common tropical weed, is found at Natal.

## 2. ERYTHROPHYSA, E. Mey.

Flowers perfect, irregular. Calyx campanulate, oblique, coloured, 5-lobed, the lobes obtuse, unequal. Petals 4 (the place of the fifth vacant), inserted under the margin of a fleshy, cup-like disk, on long, linear, pilose claws; limb oblong, obtuse, hooded at base, and furnished with a short, petaloid, toothed and crested, but beardless scale. Stamens 8, ascending, inserted together under a fleshy gland, on that side of the flower where the fifth petal is deficient; filaments hairy; anthers oblong, 2-celled. Ovary shortly stipitate, 3-angled, tapering into a short 3-angled style, 3-celled; ovules in pairs, one above the other. Fruit inflated, of 3 membranous, dorsally-winged, valveless carpels, connate by their inner faces. Seed solitary, globose, exalbuminous.—*Fl. Cap. i. p. 237.*

*E. undulata*, E. Mey., the only species, is a rigid, glabrous shrub, with imparipinnate leaves on winged petioles, and racemose red flowers. It grows in Namaqualand.

## 3. SCHMIDELIA, Linn.

Flowers irregular, polygamo-dioecious. Sepals 4, in opposite pairs, hooded, membranous, imbricate, the outer small. Petals small or 0, glabrous or bearded. Disk unilateral, either lobed or swelling in glands opposite the petals. Stamens more or less excentric, short. Ovary excentric, 2-celled, compressed or 2-parted; style 2-3-lobed or partite; ovules solitary. Fruit of 1-2 ovoid or globose, leathery or fleshy carpels.—*Fl. Cap. i. p. 238.*

Trees or shrubs, chiefly tropical. Leaves rarely 1-, commonly 3-foliate. Flowers small, in axillary racemes.—5 South African species, in the Eastern district and at Natal.

## 4. HIPPOBROMUS, E. and Z.

Flowers regular, polygamous. Sepals 5, persistent, rounded, concave, unequal, imbricate. Petals 5, obovate, glabrous, ciliate-fringed, without scale. Disk annular. Stamens 8, central, exserted; filaments glabrous. Ovary subglobose, 3-celled, silky; style short; stigma 3-fid; ovules mostly solitary. Fruit globose, leathery, 3-celled, indehiscent.—*Fl. Cap. i. p. 241.*

*H. alata*, E. and Z., the only species, is a resiniferous tree, with abruptly pinnate leaves, the common petiole winged. Panicles axillary, short; flower reddish, velvety. It is common in woods in the Eastern district and at Natal.

### 5. **SAPINDUS**, Linn.

Flowers polygamous. Calyx 5-parted or of 5 imbricating sepals. Petals 4, 5, 6, naked or bearded on the base inside, or having a scale above the claw. Stamens 8-10, rarely more, inside an annular disk. Ovary 2-4-lobed, 2-4-celled; style 1; stigmas 3. Fruit fleshy or leathery, of 3 (or 1-2) oblong or globose, indehiscent cocci.—*Fl. Cap.* i. p. 240.

Trees, with pinnate or (rarely) simple, leathery leaves. Flowers in axillary racemes or terminal panicles.—3 Cape species, found in the Eastern district and at Natal.

## TRIBE 2. DODONEÆ. (Gen. 6-8.)

### 6. **DODONEA**, Linn.

Flowers deciduous. Sepals 2-5, imbricate or valvate. Petals 0. Disk in the male obsolete, in female small. Stamens 5-8, central; filaments very short; anthers linear-oblong, bluntly 4-angled. Ovary sessile, 3-6-angled, 3-6-celled; style 3-6-fid; ovules in pairs. Capsules membranous or leathery, 2-6-lobed, the lobes dorsally winged.—*Fl. Cap.* i. p. 241.

A large genus, chiefly Australian.—2 South African species, one of them dispersed, the other at Natal. Leaves simple, obovate-oblong, lanceolate or linear-lanceolate, glabrous, often gummy. Flowers racemose, green.

### 7. **PTEROXYLON**, E. and Z.

Flowers polygamo-dicæcious. Sepals 4, short, obtuse. Petals 4, at first erect, slightly imbricate, then spreading, concave. Disk annular, 5-crenate. Stamens 4, at the base of the disk; filaments glabrous; anthers oblong. Ovary compressed, obcordate, 2-celled; ovules solitary; styles 2 or connate in 1; stigma capitate. Capsules compressed, 2-lobed at apex, cordate at base, 2-celled, 2-seeded, at length 4-parted. Seeds compressed, with a membranous wing.—*Fl. Cap.* i. p. 242; *Thes. Cap.* t. 17.

*P. utile*, E. and Z., is a tree (Sneezewood) with pinnate leaves, the leaflets unequal-sided, in 5-8 pairs. Racemes paniced, axillary, shorter than the leaves. Woods in the Eastern district.

### 8. **AITONIA**, Linn. f.

Calyx deeply 4-parted, slightly imbricate, deciduous. Petals 4, much longer than the calyx, erect, oblong, sessile, convolute-imbricate. Stamens 8, hypogynous, monadelphous, exserted; filaments declinate, subulate, flat, their dilated bases



confluent. Disk cup-like, crenulate, fleshy, within the stamens. Ovary sessile, 4-lobed, 4-celled; ovules in pairs; style filiform, exserted. Capsules inflated, membranous, deeply 4-lobed, sharply 4-angled, 4-celled.—*Fl. Cap.* i. p. 243.

*A. Capensis*, Linn. f., the only species, is a shrub with narrow linear evergreen leaves, purple flowers and bladdery capsules, found in the Uitenhage, Albany, etc., districts.

### TRIBE 3. MELIANTHÆ. (Gen. 9-10.)

#### 9. MELIANTHUS, Linn.

Flowers perfect. Calyx compressed, oblique at base, subsaccate, 5-parted, segments very unequal, imbricate. Petals 5, excentric, the fifth very minute or 0, declinate, subperigynous, narrow, long-clawed, tomentose in the middle. Disk thickened, unilateral, covering the gibbous base of the calyx, secreting honey. Stamens 4, hypogynous, inserted within the disk, didynamous, and curved. Ovary oblong, 4-lobed, 4-celled; style central, incurved, filiform, 4-toothed at apex; ovules 2-4 in each cell. Capsules membranous, deeply 4-lobed, 4-celled; cells 1-seeded. Seeds albuminous.—*Fl. Cap.* i. p. 367.

Glabrous or hoary, often glaucous, often strong-scented. Leaves alternate, stipuled, pinnate; leaflets sharply-toothed or entire. Racemes axillary and terminal.—5 species, two of which are dispersed, three North-Western.

#### 10. BERSAMA, Fresen.

Flowers perfect or polygamo-diœcious. Sepals 5, subequal, free, or two more or less connate, imbricate. Petals 5, unequal, clawed, the front one larger, the claws nude or glandular at apex, imbricate. Disk unilateral, semi-annular or sub-complete, raised. Stamens 4, central, inserted with the disk, either all connate or 2 free. Ovary oblong, terete, 4-5-celled; style elongate, curved; ovules solitary, erect. Capsules globose or oblong, coriaceous or ligneous, 4-5-celled, loculicidally 4-5-valved, valves septiferous. Seed arillate, albuminous.—*Natalia, Hochst.*; *Fl. Cap.* i. p. 369.

Trees and shrubs. Leaves alternate, imparipinnate; leaflets entire or serrulate. Racemes terminal, lateral, simple; flowers small, white.—2 South African species, both found near Natal.

### GENUS OF UNCERTAIN AFFINITY.

#### GREYIA, Hook. and Harv.

Calyx 5-parted, persistent, its segments obtuse, subequal, imbricate. Petals 5, oblong, sessile, deciduous, coriaceous, imbricate. Stamens hypogynous, in two rows, those of the outer row (staminodia) 10, without anthers, their very short

filaments adnate to the inner face of a fleshy, cup-like, 10-crenate disk, and each crowned with a peltate gland; those of the inner row 10, fertile, free, alternating with the staminodia, much exserted; filaments subulate, declined; anthers terminal, short, didymous, opening at the sides; pollen oval, very soon shed. Ovary free, deeply 5-furrowed, formed of 5 induplicate-valvate carpels, 1-celled, tapering into a subulate, exserted, declinate style; stigma minutely 5-toothed; ovules on sutural placentas, very numerous. Capsules deeply 5-lobed, of 5 follicular, papery carpels, slightly cohering at the sutures. Seeds minute, with membranous testa, and a small straight embryo, in the base of copious, fleshy albumen.—*Fl. Cap.* ii. p. 309.

*G. Sutherlandi*, Thes. Cap. t. 1, is a middle-sized tree or large shrub, with alternate, simple, exstipulate leaves. Petioles clasping at base. Leaves subrotund, cordate at base, 2–4 inches diameter, multilobulate and crenate, glabrous. Racemes terminal, densely many-flowered; flowers crimson, very showy. Grows near Natal.—By Dr. Hooker this genus is regarded as a genuine *Sapindaceæ*, of the tribe *Meliantheæ*. Though I allow that there are many points of agreement in the general structure of the flower, yet I am of opinion that the 1-celled ovary, *parietal* placentas, *indefinite and very numerous* ovules, *copiously albuminous* seeds, and *minute, straight* embryo are all important characters at variance with *Sapindaceæ*.

## ORDER XL. ANACARDIACEÆ.

Flowers either complete, polygamous or unisexual. Calyx 3–7-fid or parted, sometimes enlarged after flowering, rarely irregularly torn. Petals 3–7, rarely 0, free, sometimes enlarged after flowering. Disk annular (rarely stipitate). Stamens mostly twice as many as petals, rarely only as many or numerous, inserted at the base of the disk. Ovary in the female mostly ovoid, 1-celled; in *Spondiææ* 2–5-celled, or rarely of several separate carpels; in the male, 3–4 empty separate or confluent carpels; styles 1–3. Ovules solitary, pendulous, either from the side of the ovary or from a slender cord rising from its base. Fruit mostly drupaceous, 1–5-celled. Seed exalbuminous.—Trees or shrubs, with caustic, balsamic or gummy juice. Leaves alternate, simple or compound, without stipules.

Tribe 1. ANACARDIÆ. Ovary 1-celled, with one ovule (sometimes with 3–4 empty carpels).

Stamens 8. Sepals and petals 4 . . . . . 1. ODINA.

Stamens 4–5.

Calyx unchanged in fruit.

Drupe compressed, wingless . . . . . 2. RHUS.

Drupe much compressed, sharply edged. Style 1 3. BOTRYCERAS.

Fruit compressed, oblique, broadly winged.

Styles 3 . . . . . 4. *SMODINGIUM*.  
Calyx in fruit enlarged and coloured . . . . . 5. *LOXOSTYLIS*.

Tribe 2. *SPONDIÆ*. Ovary 2-5-celled; ovules 1 in each cell.

Male flower spiked. Stamens 12-15. . . . . 6. *SCLEROCARYA*.

Male flower paniced. Stamens 8-9. . . . . 7. *HARPEPHYLLUM*.

### TRIBE 1. *ANACARDIÆ*. (Gen. 1-4.)

#### 1. *ODINA*, Roxb.

Flowers polygamo-diœcious. Calyx 4-5-lobed, persistent, the lobes imbricate. Petals 4-5, patent or reflexed. Disk annular, 4-5 crenate.—Male: Stamens 8-10, under the disk. Barren ovary 4-5-parted.—Female: Ovary sessile, free, oblong, 1-celled; styles 8-4. Drupe compressed, oblong-reniform, crowned with the persistent styles.—*Fl. Cap.* i. p. 503.

Large trees, Indian and African. Leaves usually pinnate; leaflets opposite, subsessile, entire, pale beneath. Racemes terminal, tufted. Flowers small.—2 South African species, both from Magalisberg.

#### 2. *RHUS*, Linn.

Flowers polygamo-diœcious. Calyx small, 5-6-parted, persistent. Petals 5-6, oblong or ovate, spreading. Stamens 5-6. Ovary subglobose, 1-celled (abortive in the male flower); styles 3, free or connate. Drupe nearly dry or slightly fleshy, 1-celled, containing a bony, 1-seeded nucleus.—*Fl. Cap.* i. p. 504.

A large and varied cosmopolitan genus. The leaves in the Cape species are either 3-foliate or simple. Flowers paniced, small, green.—Perhaps 60 (several undescribed newly-discovered at Natal) South African species, dispersed.

#### 3. *BOTRYCERAS*, Willd.

Flowers diœcious.—Male: Calyx 4-5-cleft nearly to the base, spreading; lobes oblong, imbricate. Petals 4-5, lanceolate, reflexed. Stamens 4-5, around the base of the fleshy, annular disk. Ovary 0.—Female: Calyx and corolla persistent, as in the male, but the petals are oblong, obtuse. Ovary ovate, compressed, 1-celled; style 1, thick, oblique; stigmas 3, bristly. Fruit with a membranous pericarp, compressed, winged at the margin, rugose, tipped with the persistent style.

*B. laurinum*, Willd., the only species, is a large, glabrous and resinous shrub, with simple, elliptic-oblong, pinninerved, serrate leaves.

#### 4. *SMODINGIUM*, E. Mey.

Flowers polygamous. Calyx 5-cleft, persistent. Petals 5, oblong, deciduous. Stamens 5; filaments subulate. Ovary free, sessile, 1-celled; styles 3. Fruit compressed, the margin

winged, obliquely-oblong, on both sides multivittate; the vittæ flexuous, parallel.—*Fl. Cap. i. p. 523.*

*S. argutum* is a glabrous shrub, with long-stalked, 3-foliolate leaves; leaflets coarsely serrate, lanceolate, penninerved. Flowers minute, in terminal panicles. Found near Natal.

### 5. LOXOSTYLIS, Spreng.

Flowers polygamous, Calyx 5-parted, segments imbricate, membranous, lanceolate; in the female flower enlarged after flowering, leafy. Petals 5, lanceolate, imbricate. Disk of 5 2-fid, perigynous glands. Stamens 5, between the glands of the disk; the filaments unequal. Ovary (in the female) oblique, compressed, 1-celled; styles 3, lateral, unequal; stigmas capitate. Drupe small, oblique, compressed, hidden within the large leafy calyx.—*Fl. Cap. i. p. 524.*

*L. alata*, Spreng., the only species, is a small, glabrous tree. Leaves imparipinnate; leaflets opposite, subsessile, lanceolate, entire, the common petiole winged. Flowers in terminal panicles.—Eastern district and Natal.

## TRIBE 2. SPONDIÆ. (Gen. 6-7.)

### 6. SCLEROCARYA, Hochst.

Flowers polygamo-diœcious; males spiked. Sepals 4, coloured, suborbicular, imbricate. Petals 4, oblong, obtuse, spreading, reflexed, imbricate. Disk depressed, entire. Stamens in the males 12-15; in the female fewer, some abortive. Ovary subglobose, 2-3-celled; styles 2-3, short, thick, distant; stigmas peltate. Drupe rather fleshy, with a hard, woody nucleus, 2-3 celled.—*Fl. Cap. i. p. 524.*

African trees or shrubs. *S. Caffra*, Sond., our only species, has imparipinnate leaves; leaflets 5-13, ovate or elliptical, shortly cuspidate, with long petiolules. Male spikes 2-4, terminal.—Magalisberg and Natal.

### 7. HARPEPHYLLUM, Bernh.

Flowers diœcious; males paniced.—Males: 4-5-fid, the lobes obtuse, imbricate. Petals 4-5-fid, longer than the calyx, imbricate. Disk crenate. Stamens 8-9, beneath the margin of the disk. Ovary rudimentary, 4-lobed.—Females: Flowers unknown. Drupe obovate, smooth, with a 2-celled, bony stone.—*Fl. Cap. i. p. 525; Thes. Cap. t. 125.*

*H. Caffrum*, Bernh., the only species, is a glabrous tree, found in the Eastern district and Kaffraria. Leaves crowded at the ends of the twigs, imparipinnate; leaflets sessile, falcate-lanceolate, entire, unequal-sided. Flowers white, in terminal panicles; the females unknown.

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ORDER XLI. **CONNARACEÆ.**

Flowers mostly bisexual, regular or subirregular. Calyx 5-fid or 4-5-parted, often persistent. Petals 5, perigynous, inserted in the bottom of the calyx, sessile or clawed, mostly imbricate. Stamens 5-10, inserted with the petals; filaments free or slightly connate. Ovarian carpels 5 (rarely fewer), separate, either all fertile or some abortive, the fertile 1-celled, with 2 collateral ascending ovules; styles terminal, as many as the carpels. Ripe carpels mostly solitary, follicular, leathery, rarely indehiscent. Seed solitary, with or without albumen; radicle remote from the hilum.—Trees or shrubs, chiefly tropical.

1. **CNESTIS**, Juss.

Calyx 5-cleft, valvate. Petals 5, shorter than the calyx, glabrous. Stamens 10; filaments free; anthers at length recurved. Carpels 5, sessile; styles short; stigmas capitate. Capsules 1-2, oblong, reniform or cylindrical, and curved or undulate, velvety without, within clothed with rigid and stinging hairs. Seed without aril, albuminous.—*Fl. Cap.* i. p. 527.

Shrubs, often climbing. Leaves alternate, imparipinnate; leaflets coriaceous, entire. Flowers in racemose panicles.—*C. Natalensis*, Pl. and Sd., is our only species.

ORDER XLII. **LEGUMINOSÆ.**

Calyx free, 5-toothed, cleft or parted, equal or unequal, the odd segment in front. Petals 5 (some or all occasionally wanting), usually unequal, inserted in the base of the calyx. Stamens perigynous or hypogynous, definite or indefinite, variously combined. Ovary of one carpel, with 1, 2 or many ovules, attached sometimes by long cords to the ventral suture; style proceeding from the upper margin (*i. e.* continuous with the ventral suture); stigma simple. Fruit a legume or a lomentum, rarely drupaceous. Seeds usually exalbuminous.—A vast Order, very varied in habit, but naturally divisible into 3 Suborders, as follows:—

1. **PAPILIONACEÆ.** Corolla papilionaceous; petals 5, imbricated in æstivation, the upper petal (*vexillum*, standard) exterior, folding over the 2 lateral petals (*alæ*, or wings), which fold over the 2 anterior (or *carina*, or keel). Stamens 10, all perfect, either diadelphous (9 united and 1 free) monadelphous or free.

2. **CÆSALPINIÆÆ.** Corolla irregular or subregular, not papilionaceous; petals imbricating, the 2 anterior folding over the 2 lateral, which enclose the upper petal. Stamens 10 or fewer, free or monadelphous.

3. **MIMOSÆÆ.** Flowers minute, in dense heads or spikes. Corolla re-



gular, its petals free or united in a tube, valvate in æstivation. Stamens definite or indefinite.

### Suborder 1. **Papilionaceæ.**

Tribe 1. **PODALYRIÆ.** Stamens free. Legume 2-valve, continuous. Shrubs, with simple or palmate-compound leaves.

- Legume compressed; leaves sessile, 3-foliolate;  
flowers yellow . . . . . 1. **CYCLOPIA.**  
Legume turgid, woolly; leaves petioled, simple;  
flowers purple . . . . . 2. **PODALYRIA.**

Tribe 2. **LIPARIÆ.** Stamens diadelphous (except in *Cœlidium* and *Walpersia*). Legume 2-valve, continuous. Ovary 1- or several-ovuled.—Shrubs, with simple, exstipulate leaves.

Stamens diadelphous.

Flowers yellow.

Lowest calyx-segment very large, petaloid . . 3. **LIPARIA.**

Lowest calyx-segment not longer than the rest.

Corolla conspicuous. Ovary several-ovuled. 4. **PRIESTLEYA.**

Corolla inconspicuous. Ovary 1-ovuled . . 6. **LATHRIOGYNE.**

Flowers purple or purplish, the keel darker . . 5. **AMPHITHALEA.**

Stamens united at base into a short tube, or nearly free.

Flowers purplish; leaves sessile, with inflexed margins . . . . . 7. **CÆLIDIUM.**

Flowers yellow; leaves petioled, with reflexed margins . . . . . 8. **WALPERSIA.**

Tribe 3. **GENISTEÆ.** Stamens completely monadelphous. Ovary 2- or several-ovuled.—Shrubs half-shrubs or herbs, with simple or palmately compounded leaves.

Leaves simple, without stipules.

Legume compressed.

Calyx equally 5-fid, lobes pungent. Vexil villous . . . . . 9. **BORBONIA.**

Calyx with the lowest segment very narrow.

Standard glabrous . . . . . 10. **RAFANIA.**

Legume turgid.

Keel subtruncate, shorter than the alæ . . . 11. **EUCHLORA.**

Keel sharply rostrate . . . . . 12. **CROTALARIA.**

Leaves palmately 3–5–7-foliolate (in some *Lebeckia* and in *Lotononis monophylla*, 1-foliolate, hence apparently simple).

Legume very turgid. Keel sharply beaked; flowers racemose . . . . . 12. **CROTALARIA.**

Legume not turgid (or but slightly so).

Lateral calyx segments connate in pairs; front segment separate and narrower.

Standard erect, straight, concave; keel and short style straight . . . . . 13. **PLEIOSPORA.**

Standard reflexed; keel inflexed, long style sharply-bent.

Legume straight or falcate . . . . . 14. **LOTONONIS.**

Legume repeatedly folded and twisted from side to side . . . . . 15. **LISTIA.**

- Calyx distinctly 2-lipped, the upper lip 2-fid,  
lower 3-fid. Legume linear, compressed.  
Calyx deeply divided. Corolla conspicuous.  
Standard longer than the keel; legume  
silky . . . . . 16. ARGYROLOBIUM.  
Standard shorter than the keel; legume  
torulose . . . . . 17. DICHILUS.  
Calyx shortly 2-lipped. Corolla small. Le-  
gumes glandular or viscid-pubescent . . . 18. MELOLOBIUM.  
Calyx bell-shaped, hollow or intruse at base,  
shortly 5-fid.  
Standard much longer than the keel. A  
large shrub . . . . . 19. HYPOCALYPTUS.  
Standard much shorter than the keel. A  
slender undershrub . . . . . 20. LODDIGESIA.  
Calyx oblique, 5-toothed or 5-fid. Stipules 0.  
Legume linear, flat, terete or turgid, several-  
seeded . . . . . 21. LEBECKIA.  
Legume ovate or oblong, winged on upper  
side, 1-seeded . . . . . 22. VIBORGIA.  
Calyx bell-shaped, acute at base, 5-toothed or  
5-fid.  
Leaves petioled, 3-foliate, mostly with  
stipules . . . . . 23. BUCHENRŒDERA.  
Leaves sessile; leaflets as if tufted leaves,  
without stipules . . . . . 24. ASPALATHUS.

Tribe 4. PSORALIEÆ. Stamens diadelphous. Ovary 1-ovuled.—Leaves  
never stipelled, variously compound, commonly sprinkled with resinous,  
glandular dots.

The only genus . . . . . 25. PSORALEA.

Tribe 5. TRIFOLIEÆ. Stamens diadelphous. Ovary 2- or several-  
ovuled.—Small herbs. Stem erect or trailing, but not climbing. Leaves  
palmately or pinnately 3-foliate, rarely 5-foliate, never stipelled.

Keel very acute. Legume cylindrical, many-seeded 26. LOTUS.  
Keel obtuse.

Keel adnate to the wings. Legume hidden in the  
calyx . . . . . 27. TRIFOLIUM.

Keel free. Legume longer than calyx.

Legume oval or oblong, 1-4-seeded. Flowers  
racemose . . . . . 28. MELILOTUS.

Legume linear, curved, many-seeded. Flowers  
subumbellate . . . . . 29. TRIGONELLA.

Legume much-incurved or spirally twisted,  
often bordered with spinous teeth . . . . 30. MEDICAGO.

Tribe 6. INDIGOFEREÆ. Stamens diadelphous; *anthers apiculate*!  
Ovary 2- or many-ovuled.—Stems not twining. Leaves variously com-  
pound, rarely 1-foliate. Flowers racemose. Pubescence often strigose.

Standard reflexed; keel with a *spur* at each side;

flowers red purple or white . . . . . 31. INDIGOFERA.

Tribe 7. GALEGEÆ. Stamens monadelphous or diadelphous. Ovary 2-  
or several-ovuled. Legume 2-valved, 1-celled.—Stem not twining. Leaves  
pinnate, very rarely 1-foliate, sometimes stipelled. Flowers racemose.  
Legume coriaceous or rigid, not membranous.

Flowers purple pink or white.

Small shrubs undershrubs or herbs. Legume coriaceous, compressed, linear . . . . . 32. *TEPHROSIA*.

Trees. Legume hard woody with thick margins, elliptic or lanceolate, few-seeded, slowly opening . . . . . 33. *MILLETTIA*.

Flowers yellow. Legume very long, slender, nodose . . . . . 34. *SESBANIA*.

Legume membranous, pellucid, compressed or bladdery.

Leaves pinnate. Flowers racemose.

Standard shorter than the acute keel . . . . . 35. *SUTHERLANDIA*.

Standard longer than the obtuse keel . . . . . 36. *LESSERTIA*.

Leaves simple. Flowers axillary, minute . . . . . 37. *SYLITRA*.

Tribe 8. *ASTRAGALEÆ*. Stamens diadelphous. Legume completely or incompletely longitudinally 2-celled, by the introflexion of one of the sutures.—Stem not twining. Leaves pinnate.

Legume with its lower (*carinal*) suture introflexed . 38. *ASTRAGALUS*.

Tribe 9. *HEDYSARÆÆ*. Legume more or less completely jointed, usually separating at maturity into indehiscent, 1-seeded fragments, sometimes reduced to a single joint.—Leaves variously compound or simple.

Leaflets 2-4, from the apex of a common petiole (*pellucid-dotted*) . . . . . 39. *ZORNIA*.

Leaves pinnate; leaflets in 2 or many pairs.

Stamens 10, in two 5-androus sets. Legume jointed . . . . . 40. *ÆSCHYNOMENE*.

Stamens monadelphous. Pod subterranean, indehiscent . . . . . 41. *ARACHIS*.

Leaves pinnately 3-foliolate.

Calyx tube very long; corolla inserted in its throat . . . . . 42. *STYLOSANTHUS*.

Calyx short, 2-lipped; corolla inserted in its bottom.

Legume many-jointed, spontaneously breaking up . . . . . 43. *DESMODIUM*.

Legume imperfectly jointed, not spontaneously separating . . . . . 44. *ANARTHROSYNE*.

Leaves simple or 1-foliolate.

Unarmed undershrubs or herbs.

Legume separating into 2 or more joints . . . . . 45. *ALYSICARPUS*.

Legume 1-seeded, indehiscent; flowers axillary.

Leaves obcordate; stipules free . . . . . 46. *REQUIENIA*.

Leaves cordate or lanceolate; stipules adnate . 47. *HALLIA*.

Spinous shrubs. Legume irregularly constricted, indehiscent . . . . . 48. *ALHAGI*.

Tribe 10. *VICIEÆ*. Stamens diadelphous, or monadelphous above the base.—Herbs, with abruptly pinnate leaves, the common petiole prolonged into a tendril or excurrent point.

Style with a tuft of hairs below the stigma . . . . . 49. *VICIA*.

Tribe 11. *PHASEOLEÆ*. Stamens diadelphous, or monadelphous above the base. Legume 2-valved, 1-celled.—Stem frequently climbing, prostrate or diffuse. Leaves usually pinnately-3-foliolate, sometimes 1-foliolate (in *Abrus multijugate*), stipellate.

- Leaves 3-foliolate. Ovary more than 2-ovuled.  
 Calyx tubular, obliquely truncate, entire . . . 50. DUMASIA.  
 Calyx 4-5-lobed or toothed, or cleft down one side.  
 Standard oblong, incumbent, much longer than the wings and keel. Stamens exerted . . . 53. ERYTHRINA.  
 Standard spreading, not much, if at all longer than the wings and keel. Stamens included.  
 Standard with 2 prominent, callous ridges on the vaulted claw, within.  
 Calyx subequally 4-5-fid. Style channelled, with a hooked point and oblique stigma . . . 55. VIGNA.  
 Calyx 2-lipped, upper lip very large, of 2 rounded lobes, lower small . . . 54. CANAVALIA.  
 Calyx 2-lipped, upper lip short, 2-fid, lower 3-fid . . . 56. DOLICHOS.  
 Standard without callous ridges on the claw.  
 Stamens monadelphous. Flowers minute . . . 51. TERAMNUS.  
 Stamens diadelphous.  
 Calyx 4-fid. Flowers small . . . 52. GALACTIA.  
 Calyx 5-fid. Flowers conspicuous. Plant viscidly hairy . . . 57. FAGELIA.  
 Leaves 3-foliolate (1-foliolate or pinnate). Ovary 2-ovuled.  
 Ovary glabrous or pubescent. Seeds globose-reniform, with a short scar, and subcentral seed cord . . . 58. RHYNCHOSIA.  
 Ovary hirsute. Seeds oblong, with a linear scar, and a seed cord affixed near its end (excentric) . . . 59. ERIOSEMA.  
 Leaves abruptly pinnate, in many pairs. Ovary many-ovuled. Seeds globose, scarlet and black . . . 60. ABRUS.

Tribe 12. DALBERGIEÆ. Stamens monadelphous or variously combined. Legume either completely indehiscent, or rarely splitting eventually into rigid, ligneous valves.—Stem woody arborescent or shrubby, sometimes climbing. Leaves pinnate, with few or many leaflets (rarely 1-foliolate). Leaflets opposite . . . 61. LONCHOCARPUS.  
 Leaflets alternate.

- Anthers versatile. Legume orbicular . . . 62. PTEROCARPUS.  
 Anthers terminal. Legume oblong or linear . . . 63. DALBERGIA.

Tribe 13. SOPHOREÆ. Stamens free.—Stem woody arborescent or shrubby. Leaves pinnate in many pairs, rarely 1-foliolate.

- Leaves pinnate.  
 Keel blunt, straightish; legume torulose . . . 64. SOPHORA.  
 Keel sharply rostrate; legume compressed; flowers purple . . . 65. VIRGILIA.  
 Keel incurved, blunt; legume flattened, sharp edged; flowers yellow . . . 66. CALPURNIA.  
 Leaves 1-foliolate. Corolla very open . . . 67. BRACTEOLARIA.

#### Suborder 2. *Cæsalpinieæ*.

- Leaves simply pinnate.  
 Stamens 10; anthers splitting lengthwise.

- Ovary sessile. Legume linear, very long, many-seeded . . . . . 68. PARKINSONIA.  
 Ovary stipitate. Legume broadly oblong, few-seeded . . . . . 74. SCHOTIA.  
 Stamens (fewer than 10 perfect) opening by terminal pores . . . . . 73. CASSIA.  
 Leaves 2-pinnate.  
 Half-herbaceous plants ; all parts sprinkled with black dots . . . . . 70. MELANOSTICTA.  
 Arboresecent.  
 Legume covered with sharp prickles . . . . 69. GUILANDINA.  
 Legume unarmed.  
 Flowers pedicelled. Filaments as long as petals, hairy below . . . . . 71. PELTOPHORUM.  
 Flowers sessile. Filament and style very short . . . . . 72. BURKEA.  
 Leaves simple, 2-lobed (formed of 2 confluent leaflets) . . . . . 75. BAUHINIA.

### Suborder 3. **Mimoseæ.**

- Tribe 1. **EUMIMOSEÆ.** Stamens definite (10) ; pollen powdery.  
 Flowers uniform, spiked, sessile. Legume breaking into joints . . . . . 76. ENTADA.  
 Flowers uniform, racemose, pedicelled. Legume continuous . . . . . 77. ELEPHANTORHIZA.  
 Flowers of two kinds in the spike ; the upper fertile, the lower neuter, with long, thread-like, barren filaments . . . . . 78. DICHROSTACHYS.  
 Flowers uniform, capitate, sessile. Legume 1-seeded, semiorbicular . . . . . 79. XEROCLADIA.  
 Tribe 2. **ACACIÆ.** Stamens indefinite ; pollen in small masses.  
 Corolla small, tubular ; stamens free . . . . 80. ACACIA.  
 Corolla funnel-shaped ; stamens shortly tubular at base . . . . . 81. ALBIZZIA.  
 Corolla narrow funnel-shaped ; stamens connate in a long, exserted tube . . . . . 82. ZYGIA.

## SUBORDER 1. **Papilionaceæ.** (Gen. 1-67.)

### TRIBE 1. **PODALYRIÆ.** (Gen. 1-2.)

#### 1. **CYCLOPIA, Vent.**

Calyx subequally 5-cleft, with the base indented. Petals subequal ; standard roundish, plaited at base, with a short, recurved claw ; wings oblong, with a cross fold ; keel incurved, bluntly beaked. Stamens separate, or slightly connate at base ; filaments dilated. Ovary glabrous, several-ovuled. Legume oblong, compressed, 1-locular, 2-valved, coriaceous. Seeds strophiolate.—*Fl. Cap.* ii. p. 6.

South African shrubs. Leaves sessile, palmately 3-foliolate ; leaflets narrow, linear or lanceolate, rarely ovate, glabrous or pubescent, often with



revolute margins. Stipules 0. Peduncles axillary, 1-flowered, 2-bracted at base; flowers bright yellow.—9 species, chiefly Western and South Western; only 1 Eastern.

## 2. **PODALYRIA**, Lam.

Calyx widely campanulate, subequally 5-cleft, with the base indented. Standard ample, rounded-emarginate, with a short, recurved claw; wings obovate, oblique, rather shorter than the standard, longer than the broad, obtuse keel. Stamens separate, or slightly connate at base. Ovary sessile, hairy, many-ovuled. Legume turgid, leathery, villous.—*Fl. Cap.* ii. p. 9.

South African, silky or silvery shrubs. Leaves simple, alternate, expanded. Stipules subulate, deciduous. Peduncles 1-2 or rarely 3-4-flowered. Bracts solitary, falling off before the opening of the flowers. Flowers purple rosy or bluish-white.—17 species, chiefly Western and South-Western.

## TRIBE 2. LIPARIÆ. (Gen. 3-8.)

### 3. **LIPARIA**, Linn.

Calyx indented at base, with a short tube, 5-lobed; the 4 upper lobes lanceolate, acute, the lowest very large and broad, petaloid. Corolla glabrous; standard oval-oblong; the wings oblong, one infolding the other in the bud; keel straight, acute, narrow. Stamens diadelphous. Ovary sessile, few-ovuled.—*Fl. Cap.* ii. p. 14.

South African shrubs. Leaves alternate, simple, lanceolate, rigid, pungent, exstipulate. Flowers bright yellow, in terminal heads.—4 species, all Western.

### 4. **PRIESTLEYA**, DC.

Calyx subequally 5-cleft, the lowest lobe equal to the rest, or scarcely longer. Corolla glabrous; standard roundish, shortly clawed; wings obtuse, subfalcate; keel incurved, without lateral processes. Stamens diadelphous. Ovary sessile, several-ovuled. Legume plano-compressed, 4-6-seeded.—*Fl. Cap.* ii. p. 15.

South African shrubs. Leaves alternate, simple, exstipulate. Flowers yellow, in terminal heads or racemes, or axillary.—15 species, very few Eastern.

### 5. **AMPHITHALEA**, E. and Z.

Calyx subequally 5-cleft. Standard roundish, shortly clawed, reflexed; wings oblong; keel straightish, obtuse, spurred on each side. Stamens diadelphous. Ovary 1-4-ovuled. Legume ovate, 1-2-seeded, rarely oblong, 3-4-seeded.—*Fl. Cap.* ii. p. 21; *Thes. Cap.* t. 184.

Small, generally heath-like, South African shrubs. Leaves alternate, sim-

ple, entire, sessile, exstipulate, often with revolute margins. Flowers purple or rosy, with the keel dark-tinted, axillary and subsessile or crowded in a leafy spike.—9 species, all but 3 either Western or South-Western.

### 6. LATHRIOGYNE, E. and Z.

Calyx, ovary, and legume, as in the 1-ovuled species of *Amphithalea*. Corolla scarcely longer than the calyx; the keel incurved, beaked.—*Fl. Cap.* ii. p. 593.

Only 1 species, *L. parvifolia*, E. and Z., found in Hott. Holl. and Zwarteberg Mountains. A small, twiggy shrub, 12–18 inches high. Leaves 4 lines long, lanceolate, flat, silky and silvery. Flowers 2–4, capitate, terminal, yellow, almost hidden in the very hairy calyx.

### 7. CÆLIDIUM, Vogel.

Calyx nearly equally 5-fid. Standard obovate, shortly clawed, reflexed; wings oblong; keel oblong, straight, obtuse, bluntly spurred at each side. Stamens monadelphous, the tube often very short. Ovary 1-ovulate. Legume ovate, 1-seeded.—*Fl. Cap.* ii. p. 24.

Small, much-branched South African shrubs or undershrubs. Leaves simple, entire, sessile, exstipulate, with the margin mostly inflexed, closely pubescent on the upper, either glabrous or silky on the lower.—8 species, chiefly South-Western.

### 8. WALPERSIA, Harv.

Calyx campanulate, 5-cleft; the two upper lobes broader than the 3 lower. Petals nearly of equal length, all attached to the base of the staminal tube; standard ovate, with a small callosity at the top of the claw; wings oblong, eared at base; keel subincurved, bluntly spurred at each side. Stamens shortly monadelphous, 5 longer. Ovary 2-ovuled; style subulate. Legume?—*Fl. Cap.* ii. p. 26.

*W. burtonioides*, H., the only species, was found by Zeyher at Glassenbosch. A small shrub. Leaves petioled, linear, with reflexed margins. Flowers axillary, yellow. Calyx 2-bracted at base. Ovary sessile, silky, with a long style. A very rare, little known plant.

## TRIBE 3. GENISTEÆ. (Gen. 9–24.)

### 9. BORBONIA, Linn.

Calyx acute at base, equally 5-cleft, the segments pungent. Standard hairy, emarginate; keel obtuse. Stamens 10, monadelphous, with a split tube. Ovary 2- or several-ovuled; style filiform; stigma capitate. Legume linear, compressed, longer than the calyx, several-seeded (rarely 1–2-seeded).—*Fl. Cap.* ii. p. 27.

South African shrubs or undershrubs. Leaves alternate, simple, very rigid,

many-nerved, sessile or amplexicaul, exstipulate. Flowers yellow, axillary or terminal, scattered or racemose.—13 species, chiefly Western and South-Western.

#### 10. RAFNIA, Thunb.

Calyx unequally 5-fid, the lowest segment narrowest. Corolla glabrous; standard roundish; keel incurved, either sharply beaked or obliquely truncate. Stamens 10, monadelphous. Ovary sessile or stipitate, many-ovuled; stigma capitate. Legume lanceolate or linear, the upper suture sharp or somewhat winged.—*Fl. Cap.* ii. p. 31.

Glabrous and frequently glaucous South African shrubs and half-shrubs. Leaves simple, very entire, alternate, exstipulate. Flowers yellow.—22 species, very few Eastern.

#### 11. EUCHLORA, E. and Z.

Calyx deeply 5-cleft, the lowest segment much narrower than the rest. Corolla glabrous; standard long-clawed, roundish, reflexed; wings obtuse, longer than the subtruncate keel. Stamens monadelphous, with a slit tube. Ovary few-ovuled, hairy; style glabrous. Legume swollen, ovate, few-seeded.—*Fl. Cap.* ii. p. 38.

*E. serpens*, E. and Z., the only species, is a small, prostrate undershrub. Stem, branches, and leaves hairy. Leaves lanceolate, sessile. Peduncles terminal. Flowers small, purplish, in a dense subcapitate spike. Western districts.

#### 12. CROTALARIA, Linn.

Calyx sub-2-labiate, the upper lips 2-fid, the lower 3-fid. Standard large, cordate; keel falcate-acuminate. Stamens monadelphous. Ovary 2- or many-ovuled; style long, sharply-bent, often laterally pubescent. Legume turgid, with very convex valves, sessile or stipitate, few- or many-seeded.—*Fl. Cap.* ii. p. 39.

A large genus of both hemispheres, mostly tropical. Leaves either simple or palmately 3-5-7-foliated, with or without stipules. Flowers racemose or subsolitary, yellow, rarely purple.—24 South African species, dispersed.

#### 13. PLEIOSPORA, Harv.

Calyx ovoid, 5-fid, 4 upper segments approaching in lateral pairs, the lowest narrowest. Standard straight, vaulted; wings patent; keel straight. Stamens monadelphous, with a split tube. Ovary sessile, tapering into a subulate, straight style; ovules numerous; stigma simple. Legume?—*Fl. Cap.* ii. p. 47.

*P. cajanifolia*, H., the only species, is a shrub, with the aspect of a *Psoralea*. Leaves 3-foliate; leaflets broadly lanceolate, silky. Stipules setaceous. Peduncles terminal and axillary, subcorymbose, each bearing globose or oblong, spicate heads of flowers. Magalisberg and Crocodile river.

14. **LOTONONIS**, DC.

Calyx subequally 5-fid, the lowest segment narrower than the rest, and unconnected with them, the four upper approaching in pairs, and more or less connate into 2 2-fid lobes, rarely quite separate, and then all the segments subequal. Standard obcordate or oblong, commonly pubescent; keel obtuse or acute. Stamens monadelphous. Ovary many-ovuled. Legume oblong or linear, more or less compressed, many-seeded.—*Fl. Cap.* ii. p. 47.

A large genus, chiefly South African (a few European and Asiatic). Leaves very generally 3-foliate, rarely 5-foliate, in one case 1-foliate. Flowers various, racemose umbelled capitate or solitary, yellow, rarely purple.

15. **LISTIA**, E. Mey.

Calyx 3-fid, the front segment subulate, the lateral broader, each 2-dentate. Keel obtuse, longer than the standard and wings. Stamens monadelphous. Legume linear, compressed, many-seeded, repeatedly folded and twisted from side to side.—*Fl. Cap.* ii. p. 66.

*L. heterophylla*, E. Mey., the only species, is a small procumbent plant, nearly glabrous. Leaves 3-foliate; leaflets narrow-cuneate or lanceolate-oblong. Peduncles 1-2 inches long, bearing 6-8 subumbellate yellow flowers.—Eastern.

16. **ARGYROLOBIUM**, E. and Z.

Calyx campanulate, deeply cleft, 2-lipped, the upper lip 2-fid, lower 3-fid or 3-toothed. Standard ample, longer than the keel. Stamens monadelphous. Ovary many-ovuled. Legume linear, compressed, silky, not glandular, many-seeded.—*Fl. Cap.* ii. p. 67.

Small shrubs, undershrubs or herbs, generally silky or silvery, some South European and Asiatic. Leaves 3-foliate, stipuled. Flowers yellow, peduncled or pedicelled, solitary racemose or subumbelled.—30 Cape species, dispersed.

17. **DICHILUS**, DC.

Calyx as in *Argyrolobium*. Standard oblong, shorter than the blunt keel. Stamens monadelphous. Ovary many-ovuled; stigma minute. Legume linear, compressed, subtorulose.—*Fl. Cap.* ii. p. 77.

Erect or diffuse, subglabrous half-shrubs. Leaves 3-foliate. Peduncles 1-2-3-flowered; flowers yellow.—3 species, all South African and Eastern.

18. **MELOLOBIUM**, E. and Z.

Calyx tubular, shortly or deeply 2-lipped, the upper lip 2-partite, lower 3-fid or 3-toothed. Corolla not much longer

than the calyx ; standard oblong ; keel blunt. Stamens monadelphous. Ovary several-ovuled. Legume linear, compressed, torulose, glandular or hairy.—*Fl. Cap.* ii. p. 77.

Small South African shrubs or half-shrubs, more or less viscid or glandular, variously pubescent. Leaves petioled, stipuled, 3-foliolate. Flowers yellow, in spikes or spicate racemes, with 3 bracts under each flower.—About 11 species, dispersed.

### 19. HYPOCALYPTUS, Thunb.

Calyx widely bell-shaped, shortly 5-toothed, hollowed at base. Standard roundish, reflexed, longer than the wings and keel. Stamens 10, monadelphous. Ovary lanceolate, many-ovuled. Legume linear, flat, the upper suture thickened, many-seeded.—*Fl. Cap.* ii. p. 81.

*H. obcordatus*, the only species, is a glabrous, densely leafy shrub, with palmately 3-foliolate, stipulate leaves and purple flowers.—North-Western.

### 20. LODDIGESIA, Sims.

Calyx of *Hypocalyptus*. Standard much shorter than the wings and keel. Legume ovato-lanceolate, acute at each end, flat, the upper suture thickened, few-seeded.—*Fl. Cap.* ii. p. 82.

*L. oxalidifolia*, the only species, is a small, erect or diffuse, glabrous undershrubs, with palmately 3-foliolate leaves, and small purple and white flowers, in short terminal racemes. Standard and wings white ; keel dark purple at the point.—Caledon and Swellendam.

### 21. LEBECKIA, Thunb.

Calyx obliquely bell-shaped, shortly 5-toothed, with rounded interspaces, rarely 5-cleft. Keel obtuse or subrostrate, longer than the wings, and usually than the standard. Stamens monadelphous. Ovary linear, sessile or stipitate, many-ovuled. Legume linear, either flat subcompressed terete or turgid.—*Fl. Cap.* ii. p. 82.

South African shrubs or undershrubs, very diverse in habit.—24 species, dispersed, but chiefly Western. They are arranged under five sections, as follows :—

1. STIZA. Legumes flat. Rigid, spiny shrubs, with 1-foliolate leaves. (3 species.)

2. PHYLLODIASTRUM. Legume flat. Glabrous and glaucous, unarmed half-shrubs and herbs, with filiform leaves. (4 species.)

3. EULEBECKIA. Legume narrow linear, terete or subterete. Glabrous and glaucous half-shrubs, with filiform leaves. (4 species.)

4. CALOBOTA. Legume terete or turgid. Keel obtuse, longer than wings. Shrubs or half-shrubs, pubescent or canescent, with simple or 3-foliolate, flat leaves. (10 species.)

5. VIBORGOIDES. Legume terete or turgid. Keel subrostrate, scarcely longer than wings. Rigid, unarmed shrubs, with subsessile, 3-foliolate leaves. (3 species.)



22. **VIBORGIA**, Thunb.

Calyx oblique, shortly 5-toothed. All the petals with long, slender claws; standard ovate; keel incurved or rostrate, longer than the others. Stamens monadelphous. Ovary stipitate, few-ovuled. Legume stipitate, ovate or rarely oblong, indehiscent, winged on the upper suture, sharp and thin along the lower.—*Fl. Cap.* ii. p. 90.

Rigid, slender, sometimes spiny, South African shrubs, with palmately 3-foliolate leaves, and yellow, racemose flowers.—7 species, natives of the Western and Northern districts

23. **BUCHENRŒDERA**, E. and Z.

Calyx bell-shaped, subequally 5-fid. Petals villous, on long claws; keel roundish, short and blunt. Stamens monadelphous. Ovary 8–10-ovuled. Legume obliquely ovate, somewhat turgid, 1–3-seeded.—*Fl. Cap.* ii. p. 92.

Densely silky or silvery small shrubs or half-shrubs, with petioled and stipuled, 3-foliolate leaves, and white or purple flowers.—8 species, all Eastern and beyond the Eastern frontier. Easily known from *Aspalathus* by the petioles and stipules.

24. **ASPALATHUS**, Linn.

Calyx bell-shaped, subequally 5-toothed or 5-cleft, or the 2 upper lobes shorter and broader. Standard short-clawed, erect, keeled at back, spreading; keel incurved or rarely straight. Stamens monadelphous, with a split tube. Ovary 2–4–8- or rarely many-ovuled; style glabrous, incurved. Legume obliquely ovate or sublanceolate, subcompressed, acute, 1- or few-seeded.—*Fl. Cap.* ii. p. 94.

A large and most natural South African genus of shrubs and half-shrubs, with heath-like or furze-like, rarely flat and broadish, sessile, entire leaves, without stipules.—About 150 species, arranged under 12 sections (fully described in *Fl. Cap.*), which may be recognized by the following Key:—

Flowers sessile or short-stalked, solitary or spiked,  
capitate or racemose.

Leaves flat (broad or narrow).

Leaves glabrous or roughly hairy (not silky) . . . 1. CEPHALANTHÆ.

Leaves silky or very softly and closely hairy . . . 2. SERICEÆ.

Leaves terete or 3-sided, linear or subulate.

Claws of keel and wings attached to the staminal  
tube . . . . . 3. SYNPETALÆ.

Claws of keel and wings quite free from the staminal tube.

Legume obliquely ovate, short. (Flowers  
small) . . . . . 4. LEPTANTHÆ.

Legume villous, turgid, ovate or lanceolate,  
reflexed. (Flowers sessile, lateral, mediocre) . . . 5. LATERALÆ.

Legume linear-lanceolate, many-seeded . . . 6. MACROCARPÆ.

Legume thick, villous, obliquely lanceolate, several-seeded.

Flowers lateral or subterminal, 1-2 together 7. *GRANDIFLORÆ*.

Flowers terminal, subcapitate . . . . . 8. *PACHYCARPÆ*.

Legume glabrous or silky, obliquely lanceolate.

Leaves fleshy. Flowers mediocre or large, subsessile. Legume glabrous . . . . . 9. *CARNOSÆ*.

Leaves fleshy. Flowers small, sessile. Legume glabrous or silky . . . . . 10. *PINGUES*.

Leaves not fleshy. Flowers terminal, solitary, in pairs or racemose . . . . . 11. *TERMINALES*.

Flowers 1 or few, at the end of a long filiform peduncle 12. *PEDUNCULARES*.

These shrubs are dispersed over South Africa, chiefly in dry, stony or sandy places.

#### TRIBE 4. PSORALIÆ. (Gen. 25.)

##### 25. *PSORALEA*, Linn.

Calyx campanulate, unequally 5-lobed, the lowest lobe longer and usually broader than the rest. Standard broad, with reflexed sides; keel shorter, dark-coloured. Stamens diadelphous. Ovary sessile, 1-ovuled; style slender. Legume concealed in the calyx, 1-seeded, indehiscent.—*Fl. Cap.* ii. p. 143.

A large, widely-dispersed, tropical and subtropical genus of shrubs half-shrubs or herbs, in most cases copiously sprinkled with resinous black or pellucid dots, and strongly resin-scented. Leaves pinnate or 3-foliolate, rarely 1-foliolate. Stipules free or attached to the petiole.—41 South African species, dispersed.

#### TRIBE 5. TRIFOLIÆ. (Gen. 26-30.)

##### 26. *LOTUS*, Linn.

Calyx bell-shaped, 5-cleft or 5-toothed. Standard roundish, spreading, recurved, equalling the prominent, connivent wings; keel ascending, narrow, rostrate. Stamens diadelphous. Style ascending, subulate. Legume linear, terete or subcompressed, many-seeded, 1-celled, or having septa between the seeds, when ripe splitting into 2 valves.—*Fl. Cap.* ii. p. 157.

A nearly cosmopolitan genus of herbs or half-shrubs, chiefly from temperate zones. Leaves 3-foliolate. Stipules in pairs or connate, free, large resembling the leaflets. Peduncles umbellately 2- or many-flowered, with leafy bracts under the flowers.—1 South African species, from Natal and Transvaal; 3 other doubtful species.

##### 27. *TRIFOLIUM*, Linn.

Calyx bell-shaped or tubular, unequally 4-cleft or toothed (sometimes inflated after flowering). Corolla persistent, the standard longer than the wings and keel. Stamens diadelphous. Legume minute, 1-4-seeded, enclosed in the calyx, indehiscent.—*Fl. Cap.* ii. p. 158.

Herbs, dispersed over the globe: "Trefoil," "Clover," etc.—There are 7 species found in South Africa, of which 3 are endemic, the rest probably introduced from Europe.

### 28. MELILOTUS, Tournef.

Calyx bell-shaped, subequally 5-toothed. Corolla deciduous; standard and wings longer than the obtuse keel. Stamens diadelphous. Legume oval or oblong, 1-4-seeded, longer than the unaltered calyx, indehiscent.—*Fl. Cap.* ii. p. 161.

Annuals or biennials, strongly scented, of Northern origin. Leaves pinnately 3-foliate, the leaflets sharply and coarsely toothed. Flowers small, yellow or whitish, in racemes. *M. parviflora*, Desv., is a weed near cultivation.

### 29. TRIGONELLA, Linn.

Calyx bell-shaped, 5-toothed. Corolla deciduous; standard and wings spreading; keel obtuse. Stamens diadelphous. Legume linear or oblong-linear, compressed or terete, acuminate, many-seeded.—*Fl. Cap.* ii. p. 161.

Strongly-scented herbs, chiefly from the northern hemisphere. Leaves pinnately 3-foliate. Flowers racemose, umbelled or subsolitary. *T. hamosa*, Linn., is found in the Eastern district.

### 30. MEDICAGO, Linn.

Calyx campanulate, subequally 5-toothed. Standard longer than the wings and the blunt keel. Stamens diadelphous. Stigma capitate. Legume 1- or many-seeded, spirally twisted or falcate.—*Fl. Cap.* ii. p. 162.

Herbs, abundant in Central and Southern Europe and Middle Asia, naturalized in various countries. Leaves pinnately 3-foliate, very rarely imparipinnate. Flowers minute, yellow or purple.—4 species, naturalized at the Cape.

## TRIBE 6. INDIGOFEREÆ. (Gen. 31.)

### 31. INDIGOFERA, Linn.

Calyx small, bell-shaped, 5-fid or 5-toothed. Standard roundish, reflexed; keel with a spur or prominence at each side, near the base. Stamens diadelphous; the connective of the anthers *apiculate*! ovary 2- or several-ovuled. Legume linear, terete, compressed or flattened, 1- or several-seeded, mostly with septa between the seeds.—*Fl. Cap.* ii. p. 163.

A vast genus, found in all hot countries. Shrubs undershrubs or annuals. Leaves imparipinnate or digitate, 3- or many-foliod, rarely 1-foliate or suppressed. Hairs commonly rigid, fixed by a middle point, and set in subparallel lines; some are softly hairy or villous, a few glabrous. Flowers purple rosy or white, mostly racemose.—About 120 South African species (several new, as yet undescribed), dispersed.

## TRIBE 7. GALEGEÆ. (Gen. 32-37.)

32. **TEPHROSIA**, Pers.

Calyx ebracteolate, bell-shaped, subequally 5-toothed or cleft. Standard suborbicular, large, spreading, silky or villous externally; wings adhering to the keel. Stamens monadelphous or diadelphous. Ovary many-ovuled; style filiform, glabrous or bearded. Legume linear, compressed, coriaceous, straight or curved, sessile or stipitate, continuous or with partitions between the seeds; seeds compressed.—*Fl. Cap.* ii. p. 203.

A considerable genus of hot countries. Shrubs half-shrubs or herbs, with imparipinnate, rarely digitate or 1-foliolate leaves and free stipules. Flowers racemose, red purple or white.—21 South African species, chiefly from the Eastern district and frontier, Caffraria, and Natal.

33. **MILLETTIA**, W. and A.

Calyx urceolate, bluntly toothed. Standard recurved, emarginate, longer than the wings, which are longer than the keel. Stamens imperfectly monadelphous, the upper stamen free at base. Legume elliptical or lanceolate, few-seeded, hard and woody, with thickened margins, tardily splitting open.—*Fl. Cap.* ii. p. 211.

Trees of subtropical Africa and Asia. Leaves pinnate; leaflets opposite, stipelled. Racemes or panicles axillary or terminal. Flowers purple or reddish.—2 South African species, both from Natal.

34. **SESBANIA**, Pers.

Calyx 2-bracteolate, cup-shaped, subequally toothed or cleft. Petals subequal in length; standard roundish, complicate, crested on the claw or nude; wings oblong; keel long-clawed, ascending, sharply eared or toothed at base. Stamens diadelphous, the tube wide and eared at base. Legume very long, slender, compressed or cylindrical, with thickened sutures, constricted between the seeds, and divided by cross septa into many 1-seeded loculi. Seeds cylindrical, oblong.—*Fl. Cap.* ii. p. 212.

Tropical shrubs or tall herbs. *S. aculeata*, a tall, mostly glabrous and glaucous shrub-like annual, several feet high, grows in the Natal country. Leaves abruptly pinnate, multijugate; leaflets linear, obtuse, mucronulate. Racemes short; flowers yellow. Pod 1 foot long, not 2 lines wide.

35. **SUTHERLANDIA**, R. Br.

Calyx bell-shaped, 5-toothed. Standard oblong, shorter than the oblong, boat-shaped keel, its sides reflexed; wings very short. Stamens diadelphous. Ovary stipitate, many-ovuled; style bearded along the upper side and in front below the terminal

stigma. Legume papery, inflated, many-seeded, indehiscent. Seeds reniform.—*Fl. Cap.* ii. p. 212.

*S. frutescens*, the only species, is a shrub, very variable in pubescence, mostly hoary or canous. Leaves imparipinnate, multijugate. Flowers handsome, scarlet or bright red, in axillary racemes. On dry hills throughout the colony.

### 36. LESSERTIA, DC.

Calyx bell-shaped, shortly and subequally 5-toothed. Standard obovate, emarginate, expanded, longer than the blunt keel. Stamens diadelphous. Ovary substipitate, several-ovuled; style filiform, ascending, bearded in front below the terminal stigma. Legume scarious, compressed or inflated, unequal-sided or linear, at length opening at the apex, several-seeded.—*Fl. Cap.* ii. p. 213.

South African half-shrubs or herbs, mostly canescent. Leaves imparipinnate, multijugate; leaflets often alternate, rarely glabrous. Flowers pink crimson or purple, rarely white, in axillary racemes.—About 30 African species, dispersed.

### 37. SYLITRA, E. M.

Calyx sub-2-labiate, 5-fid. Keel erect, round-pointed, shorter than the subequal standard and attached wings. Stamens monadelphous. Ovary 4-ovuled; style glabrous, the stigma capitate. Legume scarious, indehiscent, compressed, much broader than the seeds.—*Fl. Cap.* ii. p. 224; *Thes. Cap.* t. 78.

*S. biflora* is a rod-like perennial, with 1-foliate leaves, and small axillary flowers. Found near the Gamke river.

## TRIBE 8. ASTRAGALÆ.

### 38. ASTRAGALUS, Linn.

Calyx tubular or bell-shaped, 5-toothed. Standard equalling or exceeding the wings; keel obtuse. Stamens diadelphous. Ovary many-ovuled. Legume (variable in form) incompletely or completely divided longitudinally into 2 cells by the inflexion of the carinal (dorsal) suture.—*Fl. Cap.* ii. p. 224; *Thes. Cap.* t. 82.

An immense genus, but chiefly of the northern hemisphere. *A. Burkianus*, our only South African species, is a glabrous and glaucous annual, with large, leafy stipules, pinnate leaves, and small, slender, racemose flowers. Found at Magalisberg.

## TRIBE 9. HEDYSARÆ. (Gen. 39–48.)

### 39. ZORNIA, Gmel.

Calyx 2-labiate, the upper lip obtuse, emarginate, the lower 3-fid. Corolla inserted in the base of the calyx; standard roundish, with reflexed sides; wings oblong; keel of lunate



petals cohering in the middle. Stamens monadelphous, the alternate anthers small. Legume sessile, compressed, 3-6-jointed, the joints roundish, often hispid.—*Fl. Cap.* ii. p. 225.

Tropical and subtropical herbs or undershrubs. Leaves digitate, of 2-4 pellucid-dotted leaflets. Stipules broad, rigid, peltate. Bracts similar but larger, enclosing the small flowers.—*Z. tetraphylla*, a widely-distributed plant, occurs in the Eastern district and at Natal.

#### 40. *ÆSCHYNOMENE*, Linn.

Calyx 2-bracteate at base, more or less 2-lipped or 2-parted, the upper lip entire or 2-fid, the lower either entire 3-fid or 3-toothed. Standard roundish or oblong, simple at base; wings oblong, equalling or exceeding the incurved keel. Stamens 10, in 2 equal parcels, each of 5. Ovary stipitate. Legume stipitate, compressed, exserted, transversely jointed; joints several.—*Fl. Cap.* ii. p. 225.

Subtropical herbs or shrubs. Leaves pinnate, with many or few pairs of leaflets, stipuled. Peduncles racemose or 1-flowered, axillary, rarely terminal. Flowers yellow or reddish.—3 species, all from Natal.

#### 41. *ARACHIS*, Linn.

Flowers polygamous.—Male: Calyx-tube very long and slender (resembling a flower stalk); limb 2-partite, the upper lip 4-toothed, the lower slender, entire. Corolla inserted in the throat of the calyx; standard roundish; wings oblong, free; keel incurved, rostrate. Stamens monadelphous, inserted with the petals. Ovary concealed in the base of the calyx-tube, subsessile, 2-3-ovuled, abortive.—Female: Calyx, corolla, and stamens 0! Ovary on a quickly elongating, rigid, reflexed (pedicel-like) torus, stipitate, 1-celled, with 2-3 anatropous ovules; style very short; stigma dilated. Legume (buried underground) oblong, thick, netted, indehiscent, subtorulose, 2-3-seeded. Embryo straight, with thick cotyledons.—*Fl. Cap.* ii. p. 226.

*A. hypogæa* (the Earth Nut) is found near Natal, introduced from tropical America. Stems diffuse or trailing. Leaves abruptly 2-jugate; leaflets obovate, obtuse. Flowers solitary, axillary.

#### 42. *STYLOSANTHES*, Linn.

Flowers polygamous.—Male: Calyx-tube very long and slender; limb deeply 2-lipped, the upper lip 4-fid, the lower long, entire. Corolla inserted in the throat of the calyx; standard roundish; wings oblong, free; keel incurved, rostrate, shorter than the wings. Stamens monadelphous, with a split tube. Ovary sessile, in the base of the calyx-tube, commonly abortive; style filiform, very long.—Female: Calyx, corolla,

and stamen 0. Ovary subsessile, erect, 2-ovuled; style short, hooked. Legume sessile, mostly 2-jointed; joints compressed, the lower often sterile, the upper 1-seeded, separating.—*Fl. Cap.* ii. p. 227.

Weed-like herbs or undershrubs, frequently viscid-pubescent, common in hot countries. Leaves pinnately 3-foliated. Flowers in dense terminal or axillary spikes, or solitary or in pairs.—*S. setosa*, our only species, grows at the Aapjes river.

#### 43. DESMODIUM, DC.

Calyx 5-parted or deeply 2-lipped, the upper lip 2-fid, lower 3-fid. Standard roundish; wings oblong, longer than the straight, obtuse keel. Stamens diadelphous. Ovary sessile, many-ovuled. Legume several-jointed, the joints compressed, 1-seeded, membranous or rigid, separating at maturity. Seeds compressed, reniform.—*Fl. Cap.* ii. p. 227.

Herbs or half-shrubs, common in warm countries. Leaves pinnately 3-foliated or 1-foliated. Racemes terminal, slender or dense; flowers small, purple or white.—5 South African species, natives of Caffraria and Natal.

#### 44. ANARTHROSYNE, E. Mey.

Same as *Desmodium*, but—Legume compressed, linear-subfalcate, *imperfectly* jointed, but not spontaneously separating into 1-seeded fragments.—*Fl. Cap.* ii. p. 229.

Tropical and subtropical plants, with the habit of *Desmodium*. *A. robusta*, E. M., a tall, robust plant, 3 feet high, softly tomentose, is found near Natal.

#### 45. ALYSICARPUS, Neck.

Calyx persistent, glumaceous, deeply 4-parted, the upper segment emarginate or 2-fid. Corolla papilionaceous, small, scarcely longer than the calyx. Stamens diadelphous. Legume terete or subcompressed, several-jointed, the joints equal-sided, separating.—*Fl. Cap.* ii. p. 230.

Small weed-like plants of hot countries. Leaves 1-foliated, 2-stipuled; stipules and bracts dry. Flowers racemose, pedicelled, in pairs, purple, inconspicuous.—2 South African species (endemic), found in Natal and Zululand.

#### 46. REQUIENIA, DC.

Calyx bell-shaped, 5-fid, the segments acute, the lowest longest. Standard obovate; keel obtuse, 2-petalous. Stamens monadelphous, the tube cleft above. Ovary sessile, 1-ovuled; style short, incurved. Legume oval, compressed, mucronate, 1-seeded.—*Fl. Cap.* ii. p. 230.

Tomentose-canescant half-shrubs of doubtful affinity. Leaves alternate, 1-foliated; leaflets obcordate, closely penninerved, mucronate. Stipules free. Flowers very small, subsessile, solitary or clustered.—*R. sphaerosperma*, DC., our only species, is found in Transvaal.

47. **HALLIA**, Thunb.

Calyx subequally 5-fid. Standard ovate; wings oblong, longer than the obtuse keel. Stamens completely monadelphous. Ovary substipitate, 1-ovuled. Legume compressed, membranous, 1-seeded.—*Fl. Cap.* ii. p. 231.

Small, ascending or trailing slender plants, all South African. Leaves alternate, simple, very entire, often black-dotted, 2-stipuled. Flowers axillary, solitary, small, purple.—6 species, dispersed.

48. **ALHAGI**, Tournef.

Calyx shortly 5-toothed. Standard obovate, complicate; wings oblong; keel straight, obtuse. Stamens diadelphous. Ovary several-ovuled; style filiform. Legume stipitate, ligneous, terete, few-seeded, irregularly constricted here and there, but not jointed, indehiscent.—*Fl. Cap.* ii. p. 233.

Undershrubs, natives of the deserts of Northern Africa and Central Asia. Leaves simple. Peduncles axillary, spinous; flowers few, red.—Manna is collected from these plants in the East. *A. Maurorum* is said to grow in the Karroo; but requires evidence to establish it.

TRIBE 10. VICIÆ. (Gen. 49.)

49. **VICIA**, Linn.

Calyx bell-shaped, subequally 5-cleft or toothed. Corolla much exserted; standard expanded. Stamens diadelphous. Ovary subsessile; the style bent upwards at a right angle, with a tuft of hairs under the stigma. Legume compressed or turgid, 2- or many-seeded. Seeds subglobose, with an oval or linear scar.—*Fl. Cap.* ii. p. 233.

Annual or perennial, climbing herbs, natives of the northern temperate zone; naturalized in South Africa. Leaves abruptly pinnate, the common petiole produced into a tendril. Peduncles axillary, 1-2- or many-flowered. Flowers blue purple yellow or white.—*V. sativa* and *V. atropurpurea*, both introduced.

TRIBE 11. PHASEOLEÆ. (Gen. 50–60.)

50. **DUMASIA**, DC.

Calyx cylindrical, obliquely truncate, entire, 2-bracteolate at base. Claws of the petals equalling the calyx; limb of the standard cordate-oval; keel obtuse. Stamens diadelphous. Ovary few-ovuled; style filiform at base and apex, dilated beyond the middle. Legume tapering at base, 2-valved, compressed, few-seeded, contracted between the seeds.—*Fl. Cap.* ii. p. 234.

Twining undershrubs, common in tropical Asia. Leaves pinnately-3-follic-

late. Racemes axillary. Easily known by its curious calyx.—*D. villosa*, DC., grows at the Knysna.

### 51. TERAMNUS, Sw.

Calyx tubular-campanulate, 4-5-fid. Standard obovate, with a longish claw; wings narrow-oblong, oblique; keel shorter, oblique, obtuse. Stamens monadelphous, the alternate rostrate. Ovary sessile, with a short, thick style and capitate stigma. Legume linear, many-seeded, hook-pointed, septate within.—*Fl. Cap.* ii. p. 234.

Slender, twining, tropical plants. Leaves pinnately 3-foliolate; leaflets stipellate, the terminal remote. Flowers minute, on slender, axillary peduncles, in pairs, in tufts or interruptedly racemose.—*T. labialis*, a common tropical plant, grows in Caffraria and at Natal.

### 52. GALACTIA, P. Br.

Calyx 2-bracteate at base, 4-fid, the segments acute, nearly equal. Standard ovate or suborbicular, spreading or reflexed; wings oblong, shorter than the subincurved keel. Stamens diadelphous. Ovary several-ovuled, subsessile; style filiform, incurved, glabrous; stigma small. Legume linear, compressed, with cellular partitions between the seeds, several-seeded.—*Fl. Cap.* ii. p. 235.

Voluble or prostrate herbs or half-shrubs. Leaves pinnately 3-foliolate; leaflets stipelled. Racemes axillary, few-flowered. Flowers small.—*G. tenuiflora*, W. and A., a common coast-plant in hot countries, occurs at Natal.

### 53. ERYTHRINA, Linn.

Calyx either truncate or 2-labiate, or cleft on one side and spathaceous. Standard ovate-oblong, without basal ears or calli, incumbent, very much longer than the wings and the 2-petalous keel. Stamens straight, exerted, diadelphous or incompletely monadelphous. Ovary stipitate, many-ovuled; style straight, glabrous, with a lateral stigma. Legume indehiscent, compressed between the seeds, tipped with the hardened style. Seeds oval, with a linear scar.—*Fl. Cap.* ii. p. 236; *Thes. Cap.* t. 61, 62.

Trees or shrubs, natives of warm countries. Stem and leaves often prickly. Leaves pinnately 3-folioled, the terminal leaflets remote. Stipels glandular. Flowers racemose, large and handsome, scarlet or red. Seeds commonly red and black.—At least 5 (some new undescribed) South African species, natives of the Eastern district, Caffraria and Natal.

### 54. CANAVALIA, DC.

Calyx 2-labiate, the upper lip very large, truncate, emarginate or 2-fid, with broadly rounded lobes; lower small, sub-

entire or 3-fid. Standard ample, suborbicular, rigid at back, 2-callous within, with a short claw; wings oblong, eared at base; keel equalling the wings or longer, shorter than the standard, incurved. Disk sheathing. Stamens monadelphous or imperfectly diadelphous. Ovary linear, multi-ovulate; style incurved, glabrous, with a terminal stigma. Legume compressed, subfalcate, with partitions between the seeds. Seeds compressed, with a linear scar.—*Fl. Cap.* ii. p. 238.

Climbing or prostrate, tropical or subtropical herbs or undershrubs. Leaves pinnately 3-foliolate, the terminal leaflets subdistant. Stipules small; stipels minute or 0. Racemes axillary, subspicate; flowers solitary or in pairs, rosy purple or white.—2 species found near Natal, but neither endemic.

#### 55. VIGNA, Savi.

Calyx 2-bracteate at base, bell-shaped, 4-5-fid (the upper lobes separate or connate), the lowest lobe longest. Standard ample, spreading, with an arched and vaulted claw, and 2 callous ridges at base within; wings oblong, produced at base or eared on the claw; keel not twisted, inflexed or rostrate. Stamens diadelphous or monadelphous. Disk sheathing. Ovary linear, several-ovuled; style compressed and channelled on one side, incurved; stigma hooked, oblique. Legume terete or compressed, subfalcate, subtorulose, with cellular partitions between the seeds. Seeds subreniform, with a small strophiole.—*Fl. Cap.* ii. p. 239.

Twining or erect, undershrubs or herbs, natives of warm countries. Leaves pinnately 3-foliolate. Flowers on long peduncles, floriferous at summit, or racemose. The pods of many are eaten as "French Beans;" *V. Catjang* is often cultivated for its pods.—At least 8 species in the Eastern district and Natal, of which 6 are endemic.

#### 56. DOLICHOS, Linn.

Calyx bell-shaped, 2-lipped, the upper lip 2-fid or subentire, lower 3-fid. Standard spreading or incumbent, equalling the keel, with 2-4-callous ridges within; wings oblong; keel falcate or incurved (or nearly straight), neither twisted nor bent to one side. Stamens diadelphous. Ovary substipitate, several-ovuled; style channelled or terete; stigma capitate. Legume compressed, straight or falcate, 2- or several-seeded, with cellular partitions between the seeds.—*Fl. Cap.* ii. p. 242.

Twining or prostrate plants of warm countries. Leaves pinnately 3-foliolate or rarely 5-foliolate, stipellate. Flowers racemose subcorymbose or solitary, 2-bracteolate, red purple blue or white.—11 species, of which 10 are endemic, chiefly Eastern.

#### 57. FAGELIA, Neck.

Calyx 5-cleft beyond the middle, the segments linear, acute,



straight, the 2 uppermost somewhat connate. Standard reflexed; keel very obtuse, longer than the wings. Stamens diadelphous. Ovary sessile, several-ovuled; style subulate, glabrous; stigma obtuse. Legume turgid, about 6-seeded, constricted between the seeds, 2-valved. Seeds ovate, strophiolate, with a linear hilum.—*Fl. Cap.* ii. p. 247.

A twining, strong-smelling, viscidly hairy shrub. Leaves pinnately 3-foliated, the terminal leaflet remote. Racemes axillary; flowers yellow, the keel tipped with purple.—Common in the Western districts.

### 58. RHYNCHOSIA, Lour.

Calyx bell-shaped, mostly oblique, 4-5-fid, the 2 upper lobes more or less united, the lowest longest. Petals nearly of equal length or the wings shorter; standard obovate or orbicular, mostly with 2 minute, inflexed ears at base, naked or 2-callous within; wings narrow, eared at base; keel broader, incurved, obtuse or subrostrate. Stamens diadelphous; the vexillary filament quite free, mostly knee-bent. Ovary subsessile, with 2 ovules; style incurved beyond the middle, quite glabrous and mostly thickened above, filiform and often hairy at base. Legume compressed, oblique or falcate, rarely septate within. Seeds 1-2, compressed with a lateral short or oblong scar, and a subcentral seed-cord.—*Fl. Cap.* ii. p. 247.

Climbing or prostrate, rarely erect, herbs or undershrubs, mostly sprinkled with resinous dots, natives of warm countries. Leaves commonly pinnately 3-foliate, rarely 1-foliate or pinnate, or 2-3-pinnate, plurijugate. Peduncles mostly racemose, rarely umbelled or 1-flowered. Flowers yellow, streaked with brown, rarely purple.—About 30 South African species (some new undescribed), dispersed, but chiefly Eastern.

### 59. ERIOSEMA, DC.

Calyx bell-shaped, 5-fid, the upper lobes sometimes connate. Petals subequal; standard obovate or oblong, with inflexed ears at base; wings narrow, longer or shorter than the wider, incurved, obtuse keel. Stamens diadelphous. Ovary sessile, very hairy, 2-ovuled; style filiform, quite glabrous above the middle, incurved and often thickened upwards; stigma small or capitate. Legume compressed, obliquely orbicular-rhomboid or broadly oblong, hairy. Seeds 2-1, compressed, oblong, obliquely transverse, the seed-cord fixed at one end of a linear scar.—*Fl. Cap.* ii. p. 258.

Erect or prostrate, rarely twining, herbs or undershrubs of warm countries. Foliage and inflorescence of *Rhynchosia*, to which this genus is closely allied, and from which it is known by the obliquely transverse seeds and the excentric seed-cords; a character easily seen in the unripe fruit.—At least 9 Cape species, all Eastern or from Natal or Transvaal.

60. **ABRUS**, Linn.

Calyx bell-shaped, shortly 4-fid or 4-toothed, the upper lobe entire or 2-fid. Standard ovate, about as long as the subfalcate keel. Stamens 9, monadelphous, in a split tube; no vexillary stamen! Ovary several-ovuled; style short, incurved, glabrous. Legume oblong, compressed, 4-6-seeded, with partitions between the seeds.—*Fl. Cap.* ii. p. 262.

Diffuse or climbing, slender, woody plants, chiefly of tropical Asia, but naturalized in the tropics generally. Leaves abruptly pinnate, multijugate. Flowers racemose, orange. Seeds oblong, red, with a black spot round the hilum; sometimes used as beads. The roots may be used as a substitute for liquorice.—The common *A. precatorius*, Linn., grows at Natal; also *A. levigatus*, Em., an endemic species.

## TRIBE 12. DALBERGIEÆ. (Gen. 61-63.)

61. **LONCHOCARPUS**, H. B. K.

Calyx truncate, or shortly 4-5-toothed. Wings slightly cohering above the claw of the keel, whose petals slightly cohere at back, above. Vexillary stamen quite free at base, above connate with the rest into a complete tube; anthers versatile. Ovary 2- or several-ovuled. Legume flat, oblong or elongate, membranous coriaceous or ligneous, indehiscent, with a terminal style; the sutures not winged. Seeds if many, distant, compressed; radicle inflexed.—*Fl. Cap.* ii. p. 263.

Trees or climbing shrubs. Leaves alternate, imparipinnate; leaflets opposite; stipels few or 0. Racemes simple or paniced; flowers violet purple or white, but not yellow.—*L. Philenoptera*, Bth., also a native of Abyssinia, occurs near Lake Ngami.

62. **PTEROCARPUS**, Linn.

Calyx turbinate-campanulate, acute at base, oftener incurved, 5-toothed, sub-2-labiate. Petals of the keel at back, near the apex, shortly connate or nearly free. Stamens 10, sometimes monadelphous with a split tube, sometimes equally diadelphous, and sometimes 1 only free; anthers versatile. Ovary 6-8-ovuled. Legume compressed, indehiscent, orbicular or ovate, more or less oblique or falcate, with a lateral or rarely terminal style, bearing seeds in the middle, more or less indurated or thickened, with a surrounding membranous ring or sharp ridge, sometimes almost completely attenuate-coriaceous or membranous. Seeds 1-3, separated by hard partitions.—*Fl. Cap.* ii. p. 264.

Unarmed, tropical and subtropical trees. Leaves imparipinnate; leaflets alternate or irregularly opposite. Racemes simple or paniced; flowers yellow, rarely whitish, with violet shades; petals glabrous.—*P. sericeus*, Bth., our only species, grows by the Hex and Aapjes rivers.

63. **DALBERGIA**, Linn.

Calyx campanulate, 5-toothed, the upper teeth broader, the lowest longest. Petals of the keel keeled above at the apex. Stamens 10, monadelphous with a split tube, or 9, the vexillary wanting; or equally diadelphous; anthers small, erect, didymous, shortly opening at the apex, or rarely longitudinally splitting. Ovary stipitate, few-ovuled. Legume oblong or linear, rarely falcate, flat, thin, indehiscent, either 1-seeded or distantly few-seeded, slightly hardened and often netted at the seed, the margins neither thickened nor winged.—*Fl. Cap.* ii. p. 264.

Trees or climbing shrubs of warm countries. Leaves imparipinnate, the leaflets exstipelled and mostly alternate. Inflorescence dichotomous, or irregular. Flowers small, purple violet or white.—3 species in Caffraria and at Natal.

## TRIBE 13. SOPHOREÆ. (Gen. 64–67.)

64. **SOPHORA**, Linn.

Calyx widely bell-shaped, obliquely truncate, obsoletely or shortly 5-toothed. Petals of equal length; standard obovate or roundish, erect or spreading; wings oblong, clawed, eared at base; keel obtuse, straight, its petals imbricating and connate in the middle, free above. Stamens 10, free, glabrous. Ovary subsessile, many-ovuled; style slightly curved, glabrous. Legume constricted at intervals, indehiscent, wingless, several-seeded.—*Fl. Cap.* ii. p. 265.

Trees shrubs or herbs, chiefly tropical. Leaves imparipinnate. Flowers racemose, white blue or yellow.—*S. nitens*, Bth., our only species, is a densely silky-silvery shrub, as yet only found by T. Williamson, near Natal.

65. **VIRGILIA**, Lam.

Calyx widely bell-shaped, shortly 2-lipped, the upper lip 2-fid, lower 3-fid. Standard orbicular, strongly reflexed; wings oblong; keel incurved, rostrate. Stamens 10, free. Ovary sessile, villous, several-ovuled; style glabrous. Legume coriaceous, compressed, tomentose, many-seeded, stuffed between the seeds, the sutures very obtuse.—*Fl. Cap.* ii. p. 266.

*V. Capensis*, the only species, is a tree (Wilde Keureboom). Leaves pinnate, in 6–10 pairs, exstipulate; leaflets linear-oblong, glossy above, tomentose beneath. Flowers rosy-purple, in many-flowered racemes. Found along riversides, throughout the colony.

66. **CALPURNIA**, E. Mey.

Calyx widely bell-shaped, shortly 5-fid, the 2 upper lobes semiconnate. Standard erect; wings oblong; keel incurved,

obtuse, 2-fid. Stamens 10, free or connate at base, persistent. Ovary stipitate, several-ovuled. Legume membranous, compressed, glabrescent, netted, few- or several-seeded, somewhat winged along the ventral suture, the valves cohering between the seeds.—*Fl. Cap.* ii. p. 266.

African trees or shrubs. Leaves imparipinnate, multijugate. Racemes axillary and terminal, the peduncle often paniced. Flowers yellow.—At least 6 Cape species, all Eastern.

#### 67. BRACTEOLARIA, Hochst.

Calyx 2-bracteolate, deeply 2-lipped, reflexed. Corolla expanded; standard ample, suborbicular; wings spreading widely; petals of the keel shortly connate in the middle, spurred at base. Stamens 10, free, glabrous, exserted. Ovary sessile, villous, few-ovuled; style short, reflexed; stigma simple. Legume unknown.—*Fl. Cap.* ii. p. 268; *Thes. Cap.* t. 20.

*B. racemosa*, Hochst., the only species, grows near Natal. Leaves simple, ovate-lanceolate, acute, glabrous. Flowers white (?), in axillary racemes. Another species is found in North Africa.

#### SUBORDER 2. *Cæsalpinieæ*. (Gen. 68–75.)

#### 68. PARKINSONIA, Linn.

Calyx coloured, with a short urceolate tube, and 5-parted, subequal, deciduous limb. Petals 5, in the throat of the calyx, ovate, flat, the upper one with a long claw. Stamens 10, free, declined; filaments villous at base. Ovary sessile, many-ovuled; style subulate, ascending; stigma simple. Legume very long, acuminate at each end, compressed between the seeds, 2-valved, many-seeded.—*Fl. Cap.* ii. p. 269.

Tropical and subtropical shrubs, armed with spines. Leaves pinnate, multijugate; leaflets small. Flowers racemose, yellow.—*P. Africana*, Sd., our only species, grows in Namaqualand.

#### 69. GUILANDINA, Juss.

Calyx with a short, urceolate tube, and subequally 5-parted limb. Petals 5, in the throat of the calyx, sessile, nearly equal. Stamens 10, free; filaments villous at base. Ovary stipitate, several-ovuled; style short; stigma simple. Legume ovate, ventricose, compressed, 2-valved, 1–2-seeded, covered with straight prickles.—*Fl. Cap.* ii. p. 269.

Tropical trees and shrubs, the stem and petioles armed with hooked prickles. Leaves abruptly 2-pinnate. Flowers in spicate racemes; bracts long.—*G. Bonduc*, Ait., a native of India and Arabia, occurs on the coast, near Natal.

#### 70. MELANOSTICTA, DC.

Calyx deeply 5-parted, segments deciduous, the lowest



largest. Petals 5, in the throat of the calyx; 4 lower ovate-oblong, subequal; upper one shorter and broader, with inflexed edges. Stamens 10, free, ascending, equalling the petals; anthers short. Ovary sessile, ovate-oblong, 4-ovuled; style short, straight. Legume compressed, oblong, setose.—*Fl. Cap.* ii. p. 270; *Thes. Cap.* t. 2.

Small plants, the stem, petioles, leaflets, peduncles, calyx, ovary, and legumes, sprinkled with black, resinous dots. Leaves 2-pinnate, stipulate and stipellate. Flowers racemose.—2 species, from Transvaal and Zululand.

### 71. PELTOPHORUM, Vog.

Calyx-tube turbinate; limb 5-parted, deciduous, the segments oblong, reflexed. Petals 5, obovate, curled at the edge, clawed. Stamens 10, inserted with the petals, free; filaments equalling the petals, hairy at base, inflexed in bud; anthers versatile, slitting longitudinally. Ovary sessile, compressed, few-ovuled; style filiform; stigma peltate, depressed in the centre. Legume broadly oblong, much compressed, unarmed, acute at each end, 1-2-seeded. Seeds oblong, with a subterminal hilum and straight embryo.—*Fl. Cap.* ii. p. 270.

Trees or shrubs. Leaves abruptly pinnate. Flowers racemose, yellow.—*P. Africanum*, Sd., our only species, is found near Crocodile river and at Magalisberg.

### 72. BURKEA, Hook.

Calyx 5-parted, the segments equal, imbricate. Petals 5, subequal, spreading. Stamens 10; filaments very short, the alternate slightly longer; anthers oblong, equal, tipped with a deciduous gland. Ovary subsessile, 2-ovuled; style very short; stigma obliquely peltate, concave, with a wavy margin. Legume plano-compressed, oblique, narrowed at base, stipitate, thinly coriaceous, indehiscent. Seeds ovate-orbicular; embryo straight.—*Fl. Cap.* ii. p. 271.

*B. Africana*, Hook., the only species, is a shrub or small tree, with abruptly 2-pinnate leaves, and axillary, many-flowered racemes. Grows at Magalisberg.

### 73. CASSIA, Linn.

Calyx 5-parted nearly to the base, more or less unequal. Petals 5, clawed, more or less unequal. Stamens 10, the 3 upper commonly sterile (sometimes wanting); fertile anthers opening by 2 terminal pores or short clefts. Ovary sessile or stipitate, multiovulate; style filiform; stigma simple. Legume terete or compressed, linear, many-seeded.—*Fl. Cap.* ii. p. 271.

A vast tropical genus, much diversified. Leaves abruptly pinnate, often



having glands on the petioles. Flowers yellow or orange.—About 4 South African species, all Eastern or from Natal.

#### 74. **SCHOTIA**, Jacq.

Calyx-tube obconical; limb 4-parted, the segments oval, obtuse, imbricating, deciduous. Petals 6, in the throat of the calyx, nearly equal. Stamens 10, more or less connate at base; filaments free above, the alternate shorter; anthers ovate, longitudinally slitting. Ovary stipitate, ovate, several-ovuled; style filiform, elongate; stigma capitate or simple. Legume coriaceous, oblong, compressed, the upper margin or both margins winged. Seeds 1-6, either with the scar naked or having a large, fleshy, cup-like aril.—*Fl. Cap.* ii. p. 273.

South African trees or shrub. Leaves pinnate; leaflets leathery, entire. Flowers paniced, crimson pink or flesh-coloured.—3 species, from the Eastern district and Natal.

#### 75. **BAUHINIA**, Plum.

Calyx-tube cylindrical or bell-shaped; limb 5-parted, deciduous or persistent, its segments separate or cohering in a reflexed, strap-shaped lobe. Petals 5, clawed, subequal, variously inserted. Stamens 10, monadelphous or free, exserted, either all fertile or several (5-7-9) sterile; filaments filiform; anthers incumbent, slitting.—*Fl. Cap.* ii. p. 275.

Trees or climbing shrubs, chiefly tropical. Leaves formed of 2 partially connate or nearly confluent leaflets, resembling a 2-lobed leaf. Flowers racemose.—At least 4 South African species, all but one Eastern.

### SUBORDER 3. **Mimoseæ**. (Gen. 76-82.)

#### TRIBE 1. **EUMIMOSÆ**.

#### 76. **ENTADA**, Linn.

Flowers sessile or shortly pedicelled. Calyx bell-shaped, shortly 5-toothed. Petals 5, free or nearly so. Stamens 10, anthers gland-bearing. Legume linear, plano-compressed, margined with thickened, persistent sutures, the valves transversely jointed, separating into 1-seeded, indehiscent fragments.—*Fl. Cap.* ii. p. 276.

Shrubs, mostly climbing. Leaves 2-pinnate, the terminal pair often changed to tendrils. Spikes of flowers slender, solitary or paniced.—3 species, all Eastern. One of them, *E. scandens*, Benth. (the Sword-bean), grows also in the East Indies.

#### 77. **ELEPHANTORHIZA**, Benth.

Flowers pedicelled. Calyx short, 5-toothed. Petals lanceolate, at length free. Stamens 10; anthers tipped with a deciduous, stalked gland. Legume straight, compressed, lea-

thery, the sutures remaining closed, but the long, persistent, rigid valve separating (as in a siliqua), without transverse septa, and not pulpy within.—*Fl. Cap.* ii. p. 277.

Glabrous undershrubs, with large fleshy roots (Elandsboontjes). Leaves 2-pinnate, multijugate. Flowers densely spicato-racemose.—2 species, both Eastern.

### 78. *DICHROSTACHYS*, DC.

Flowers of two kinds in the spike; the uppermost flowers hermaphrodite and sessile, as in *Entada*; the lower neuter, with calyx and corolla as in the perfect, 10 long, slender filaments, without anthers, and a rudiment of an ovary. Legume linear, twisted, compressed, membranaceo-coriaceous, or somewhat fleshy, 1-celled, without pulp, indehiscent or the valves breaking irregularly from the sutures.—*Fl. Cap.* ii. p. 278.

African and Asiatic shrubs, sometimes spiny. Leaves 2-pinnate. Spikes of flowers peduncled, nodding, solitary or in pairs.—2 South African species, from Natal and to the north-east of that region.

### 79. *XEROCLADIA*, Harv.

Flowers capitate, sessile. Calyx 5-parted to the base. Petals 5, free. Stamens 10; filaments free, the 5 alternate shorter; anthers with a very minute, sessile gland. Legume sessile, semiorbicular, plano-compressed, 1-seeded, indehiscent, the carinal suture arched and wing-bordered. Seed flattened; embryo straight.—*Fl. Cap.* ii. p. 278.

*X. Zeyheri*, H., from Namaqualand, is a small, dry, and very rigid bush, with pale bark, spinous stipules; distant, 2-pinnate, deciduous leaves; and subsessile heads of flowers.

## TRIBE 2. ACACIÆ.

### 80. *ACACIA*, Willd.

Flowers frequently polygamous. Sepals 3–5, either connate in a bell-shaped cup or free. Petals as many, more or less united in a monopetalous corolla, rarely at length free. Stamens numerous (mostly more than 50), free or connate at base, rarely (in male flowers) collected in a central column. Legume various, mostly dry.—*Fl. Cap.* ii. p. 279.

Trees or shrubs of warm countries. Leaves 2-pinnate. Stipular or axillary spines often present; prickles in many. Flowers minute, yellow, in heads or spikes.—About 20 South African species (some undescribed), chiefly Northern, Eastern, and from Natal.

### 81. *ALBIZZIA*, Duraz.

Flowers mostly bisexual. Calyx bell-shaped or tubular, 5-toothed. Corolla monopetalous, funnel-shaped. Stamens in-

definite, often numerous, united at base into a tube. Legume flat, dry, membranous or papery, with their margins either dehiscent or indehiscent.—*Fl. Cap.* ii. p. 284.

Unarmed trees or shrubs. Leaves 2-pinnate. Flowers in heads or spikes, with long, white or rosy, rarely purple, bundles of stamens.—2 South African species: one from Delagoa Bay, the other from Lake Ngami.

## 82. ZYGIA, P. Br.

Calyx tubular, 5-toothed. Corolla between funnel-shaped and tubular, shortly 5-lobed. Stamens very many, connate in a tube much longer than the corolla, spirally twisted in the bud, free at the summit only.—*Fl. Cap.* ii. p. 284.

Shrubs or trees, with the foliage of *Albizzia*, from which genus this differs in the long staminal tube. *Z. fastigiata*, E. Mey., our only species, grows near Natal.

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## ORDER XLIII. ROSACEÆ.

Calyx free or adnate with the ovary, open or closed, its limb mostly regular, 3-4-5-parted (or of twice as many parts, in two rows). Petals 3-5 or 0, inserted in the throat of the calyx. Stamens inserted with the petals, indefinite or rarely definite; filaments filiform, free. Ovary of one or more, often many separate carpels (except in *Grielum*); carpels 1-, 2- or many-ovuled. Styles 1 to each carpel, terminal or lateral. Fruit various. Seeds without albumen.—A large and varied Order, chiefly of the north temperate zone. Leaves alternate, pinnate or digitate, or cleft or parted, rarely simple. Stipules mostly attached to the base of the petiole.

Tribe 1. CHRYSOBALANÆ. Calyx tubular or bell-shaped. Carpel solitary, 1-2-celled, mostly attached to one side of the calyx-tube; ovules 1-2, erect. Style lateral or basal. Fruit a drupe.

1. *Parinarium*. (A dwarf shrub, with oblong, obtuse, simple leaves, white-woolly beneath; flowers small, corymbose.)

Tribe 2. DRYADEÆ. Calyx open. Carpels many, 1-ovuled, free, crowded on a convex or columnar receptacle.

\* *Shrubs; calyx 5-parted; fruit juicy.*

2. *Rubus*. (The Bramble or Blackberry.)

\*\* *Herbs; calyx 10-cleft in two rows; fruit dry.*

3. *Potentilla*. Receptacle conical. Carpels without tails.

4. *Geum*. Receptacle columnar. Carpels with long, twisted tails.

Tribe 3. SANGUISORBEÆ. Calyx-tube turbinate or pitcher-shaped, contracted in the throat. Carpels 1-4, 1-ovuled, free, concealed within the persistent calyx-tube.

\* *Flowers with petals, yellow.*

5. *Leucosidea*. Calyx-tube unarmed, limb 10-parted, in two rows.

6. *Agrimonia*. Calyx-tube armed with hooked bristles; limb 5-parted.

**\*\* Flowers without petals ; bisexual.**

7. *Acæna*. Calyx-tube armed with hooked prickles ; limb 4-5-lobed.

8. *Alchemilla*. Calyx-tube unarmed ; limb 8-lobed, in two rows.

**\*\*\* Flowers without petals, unisexual or polygamous.**

9. *Poterium*. Herbaceous. Flowers in dense terminal spikes ; calyx 4-fid.

10. *Cliffortia*. Small shrubs or half-shrubs. Flowers axillary, sessile, 3-fid.

Tribe 4?. NEURADEÆ. Flowers bisexual. Calyx-tube concrete with the ovary. Petals 5, convolute. Stamens 10. Carpels 5-10, united in a 5-10-celled capsule.

11. *Grielum*. Herbs with many-cleft, hoary leaves, and large, yellow flowers.

### TRIBE 1. CHRYSOBALANÆ. (Gen. 1.)

#### 1. PARINARIUM, Juss.

Flowers bisexual. Calyx-tube long or short, subequal or unequal-sided ; limb 5-parted, subequal, imbricate. Petals 5, rarely 4, sessile or clawed, deciduous. Stamens 10 or many, shortly connate at base or united in a lateral parcel, all perfect or some barren. Ovary adnate to the side of the calyx-tube, exserted, 2-celled (or partly so) ; ovules solitary, erect ; style basal, filiform, hairy. Drupe ovoid or globose, with fibrous or pulpy flesh, and a bony, 1-seeded nut.—*Fl. Cap.* ii. p. 596.

*P. Capense*, our only species, is a very dwarf bush, the young parts clothed with foxy hairs. Leaves 2-4 inches long, oblong, obtuse, glabrous above, white-woolly beneath. Peduncles not much branched. Grows on the Aapjes river.

### TRIBE 2. DRYADEÆ. (Gen. 2-4.)

#### 2. RUBUS, Linn.

Calyx-tube open, short ; limb 5-parted, imbricate. Petals 5, crumpled, deciduous. Stamens indefinite, perigynous. Carpels indefinite, on a convex-conical receptacle, 1-ovuled ; styles subterminal, filiform. Fruit of many little drupes, heaped together on the dry, hardened receptacle.—*Fl. Cap.* ii. p. 286.

The Raspberry and Bramble. Leaves pinnate or digitate. Flowers mostly panicle.—5 Cape species, dispersed.

#### 3. POTENTILLA, Linn.

Calyx-tube short, concave, open ; limb 8-10-parted in two rows, the inner segments valvate in bud. Petals 4-5, deciduous. Stamens indefinite. Carpels indefinite, on a convex receptacle, 1-ovuled ; styles lateral, stigmas simple. Fruit of dry achenes, sessile, on a dry, hairy receptacle, not tailed.—*Fl. Cap.* ii. p. 228.

A large genus in the northern hemisphere.—*P. supina*, Linn., a common European species, occurs by the Orange river, near its mouth. Leaves pinnate-parted, the upper 3-parted; leaflets sharply and deeply toothed. Flowers yellow.

#### 4. **GEUM**, Linn.

Calyx-tube short, open; limb 10-parted in two rows, the inner segment valvate in bud. Petals 5, deciduous. Stamens indefinite. Carpels indefinite, on a columnar receptacle, 1-ovuled; styles terminal, inflexed or sharply bent; stigmas simple. Achenes on a long receptacle, tailed with the hardened, awn-like, hooked or curved styles.—*Fl. Cap.* ii. p. 289; *Thes. Cap.* t. 18.

A considerable and chiefly northern genus.—*G. Capense*, our only species, grows in the Eastern district and Caffraria. Its leaves are chiefly radical and lyrate-pinnatisect, the terminal lobe very large. Flowers laxly panicled or solitary, large, handsome, yellow.

### TRIBE 3. SANGUISORBEÆ. (Gen. 5–10.)

#### 5. **LEUCOSIDEA**, E. and Z.

Flowers bisexual, complete. Calyx-tube obconic, constricted in the throat, with an annular perigynous disk; limb 10-parted, in 2 rows, persistent, outer lobes short, ovate, inner lanceolate, acuminate, valvate in bud. Petals 5, obovate, deciduous. Stamens 10–12, inserted on the disk. Carpels 2–3, enclosed in the calyx-tube; styles exserted, filiform, terminal; stigmas hook-pointed. Utricles membranous, enclosed in the hardened calyx-tube.—*Fl. Cap.* ii. p. 289.

*P. sericea* is a densely leafy shrub, the “Dwa-Dwa” of the natives, who use it as an astringent medicine. Leaves pinnate-parted, with 2–3 pairs of pinne; pinne ovate-oblong, sharply toothed, dark green above, white and silky beneath. Flowers racemose, greenish-yellow.—Eastern frontier and Caffraria.

#### 6. **AGRIMONIA**, Linn.

Calyx naked at base, the tube turbinate, armed with many hooked bristles constricted at the throat, with an annular disk; limb 5-parted, the lobes imbricate, at length closing in. Petals 5, deciduous. Stamens 12–20. Carpels 2, 1-ovuled, enclosed in the calyx-tube; styles terminal, exserted. Achenes 1–2, enclosed in the hardened and densely hook-bristled calyx-tube.—*Fl. Cap.* ii. p. 290.

*A. Eupatoria*, Linn., a European, Asiatic and North American species, occurs in Caffraria and on the east frontier. Leaves interruptedly pinnate; leaflets coarsely-toothed. Flowers in terminal, spiked racemes, yellow.

#### 7. **ACÆNA**, Vahl.

Flowers bisexual. Calyx-tube oblong, constricted in the



throat, bristly or smooth, compressed, 3-4-5-angled, the angles armed with hooked bristles; limb 4-, rarely 3-5-parted, persistent. Petals 0. Stamens 2-5. Carpels 1-2, enclosed in the calyx-tube, 1-ovulate; styles terminal, short; stigma pencilled. Achenes hidden in the hardened, hook-bristled calyx-tube.—*Fl. Cap.* ii. p. 290.

Herbs or undershrubs of temperate climates. Leaves pinnate-parted, the segments toothed or cut. Flowers small, green, in spikes or globose heads.—2 Cape species, both Western.

### 8. *ALCHEMILLA*, Tournef.

Flowers bisexual. Calyx-tube urceolate, constricted in the throat, with an annular disk, unarmed; limb 8-parted, in 2 rows, the outer lobes small, with imbricate æstivation. Petals 0. Stamens 1-4, exserted. Carpels 1-4, in the base of the calyx-tube, substipitate, 1-ovuled; styles basal, filiform; stigmas capitellate. Achenes 1-2, in the calyx-tube.—*Fl. Cap.* ii. p. 291.

Small, hairy herbs of the temperate zones. Leaves alternate, fan-shaped or reniform, lobed or deeply parted or crenate. Flowers minute, green, in corymbs or tufts.—2 Cape species, dispersed.

### 9. *POTERIUM*, Linn.

Flowers spiked, polygamous or unisexual, the females in the upper part of the spike. Calyx-tube turbinate, unarmed, constricted in the throat with an annular disk; limb 4-parted, imbricate. Petals 0. Stamens 20-30. Carpels 2-3, enclosed in the calyx-tube, 1-ovuled; styles terminal, exserted; stigma pencilled. Achenes concealed in the hardened or fleshy, 4-angled calyx-tube.—*Fl. Cap.* ii. p. 292.

*P. Sanguisorba*, Linn., introduced from Europe, grows near Simon's Town. Leaves chiefly radical, of many cut leaflets. Stems branched, laxly leafy; spikes globose, terminal, very dense.

### 10. *CLIFFORTIA*, Linn.

Flowers dicæcious. Calyx-tube urceolate, unarmed; limb 3-parted (rarely 4-parted). Petals 0.—Male: Stamens indefinite, 8-20-30-40; filaments very slender, much exserted.—Female: Carpels 2, enclosed in the calyx-tube, 1-ovuled; style lateral; stigmas long, feathery. Achenes 1-2, membrane-skinned, enclosed in the hardened and variously-sculptured, rarely fleshy, calyx-tube.—*Fl. Cap.* ii. p. 292; *Thes. Cap.* t. 95.

A South African genus, of about 40 small, leafy shrubs or undershrubs. Leaves properly digitately 3-foliolate, often seemingly simple or 1-foliolate, either from the confluence of the 3 leaflets into one, or from the lateral

being minute or abortive; rarely 2-foliolate, the medial leaflets disappearing. Stipules attached to the petiole. Flowers axillary, small and green, subsessile—*C. strobilifera*, Linn., is very common from Capetown to Natal; the great majority of the other species scarcely extend further east than Swellendam.

#### TRIBE 4. NEURADÆ. (Gen. 11.)

##### 11. GRIELUM, Linn.

Calyx-tube short, at length concrete with the ovary; limb 5-lobed; lobes nearly valvate in the bud. Petals 5, inserted in the throat of the calyx, large, obovate, convolute in bud. Stamens 10, inserted with the petals. Carpels 5–10, in the base of the calyx, confluent with the calyx-tube and with each other, 1-ovuled; styles 5–10, filiform, short; stigmas capitate. Capsules depressed, 5–10-celled, the cells at length opening in the axis, 1-seeded.—*Fl. Cap.* ii. p. 304.

South African herbs, growing in sandy places and in salt ground. Leaves alternate, hoary, pinnately decomposed, with narrow segments. Flowers large, yellow.

#### ORDER XLIV. SAXIFRAGÆ.

Calyx 5-cleft (rarely 3–10-cleft), regular, adnate to the ovary or free; limb mostly persistent, sometimes enlarged in fruit. Petals as many as the calyx-lobes, rarely wanting, sometimes cleft or lacerate. Stamens inserted with the petals in the throat of the calyx, as many as the petals and alternating, or twice as many, rarely fewer or more numerous. Ovary inferior or more or less superior, of 2 (rarely 3–5) carpels, more or less cohering by their inner faces; ovules commonly many; styles distinct, or more or less confluent. Fruit capsular, splitting at maturity through the centre. Seeds almost always albuminous.—A large and heterogeneous Order, to which it is nearly impossible to affix natural limits.

Tribe 1. SAXIFRAGÆ. Herbaceous or half-shrubby plants with exstipulate leaves.

1. *Tahlia*. Ovary inferior; styles 2, spreading. Leaves opposite, simple, linear.

Tribe 2. CUNONIEÆ. Shrubs or trees, with opposite leaves and interpetiolar stipules.

2. *Cunonia*. Flowers racemose. Petals entire. Leaves pinnate.

3. *Platylophus*. Flowers paniced. Petals 3-fid. Leaves 3-foliolate.

Tribe 3. ESCALLONIEÆ. Trees and shrubs, with alternate, simple, exstipulate leaves. Stamens as many as the petals. Ovary inferior.

4. *Choristylis*. Flowers 5-fid, minute and green, in axillary panicles. Leaves ovate, serrate, strongly-nerved, and veiny.

Tribe 4?. *BREXIEÆ*. Shrubs, with alternate, exstipulate leaves. Stamens as many as the petals. Ovary superior, 5-angled, 5-celled. Seeds without albumen.

5. *Brexia*. Flowers 5-parted, sepals and petals coriaceous, imbricated. Ovary surrounded by a 5-lobed, imbricate disk. Leaves oblong or obovate, entire.

## TRIBE 1. SAXIFRAGÆÆ.

### 1. VAHLIA, Th.

Calyx-tube adhering to the ovary; limb 5-parted, persistent, valvate in bud. Petals 5, spreading, entire, epigynous. Stamens 5. Ovary inferior, 1-celled, with 2 many-ovuled placentas pendulous from the summit of the cavity; styles 2, spreading; stigmas capitate. Capsules membranous, opening between the styles. Seeds minute, very many.—*Fl. Cap.* ii. p. 306.

*V. Capensis*, Th., our only species, is a much-branched, half-woody plant, 6 inches to 2 feet long, more or less hairy or smooth; leaves linear or lanceolate; peduncles 2-flowered, shorter than the leaves.—Found in the West and North-West districts, and Namaqualand.

## TRIBE 2. CUNONIEÆ. (Gen. 2-3.)

### 2. CUNONIA, Linn.

Calyx free, 5-parted, deciduous. Petals 5, oblong, entire. Stamens 10. Ovary free, 2-celled, conical, with many-ovuled, sutural placentas; styles 2, diverging; stigmas simple. Capsules conical, 2-horned, 2-celled, separating from base to apex, from a free, placentiferous column. Seeds many, compressed, with a narrow membranous wing.—*Fl. Cap.* ii. p. 306.

*C. Capensis*, Linn., the only species, is a large shrub or small tree, common throughout the colony, glabrous in all parts. Leaves pinnate; pinnae in 2-4 pairs, lanceolate, sharply serrate. Stipules broadly ovate, deciduous. Racemes axillary, opposite, very many-flowered; flowers white.

### 3. PLATYLOPHUS, Don.

Calyx free, 4-(rarely 5-)parted, persistent, valvate in bud. Petals 4-5, 3-fid. Stamens 8-10, on the outer edge of a fleshy, perigynous disk. Ovary free, 2-celled; ovules 2 in each cell, collateral, pendulous; styles 2; stigmas simple. Capsule turgid at base, compressed above, membranous, 2-celled, at length splitting; cells 1-seeded.—*Fl. Cap.* ii. p. 307.

*P. trifolius*, Don, the only species, is a tree 40-50 feet high, glabrous in all parts, extending at least as far east as Uitenhage, more frequent in the west. Leaves long-petioled, pinnately 3-foliate; leaflets lanceolate, minutely toothed. Panicles axillary, much-branched; flowers small, white, almost always 4-parted.

## TRIBE 3. ESCALLONIEÆ.

 4. **CHORISTYLIS**, Harv.

Flowers polygamous. Calyx-tube obconic, adnate with the ovary; limb 5-cleft, persistent. Petals 5, inserted within the margin of the calyx-tube, longer than the lobes, sessile, entire, persistent, valvate in bud. Stamens 5, alternate with the petals and inserted with them; filaments short; anthers ovate, 2-celled, slitting. Ovary 2-celled, many-ovuled, with axile placentas; styles 2, short, at first connate, then widely diverging; stigma capitate. Capsule more than half-inferior, its conical, acuminate apex girt by the persistent calyx-limb and petals, opening through the styles.—*Fl. Cap.* ii. p. 308; *Thes. Cap. t.* 123.

*C. rhamnoides*, Harv., the only species, is a leafy shrub, extending from the eastern frontier to Natal. Leaves alternate, ovate, serrate, ribbed and nerved. Flowers small and green, in axillary panicles.

## TRIBE 4?. BREXIEÆ.

 5. **BREXIA**, Thouars.

Calyx free, 5-cleft, persistent, with short, acute, leathery segments, imbricate in bud. Petals 5, inserted outside the margin of a perigynous ring, leathery, oblong, obtuse, imbricate in bud. Stamens 5, alternate with the petals and inserted with them; filaments subulate; anthers oblong, erect, basifixed. Annular disk thick, attached to the base of the ovary, with 5 fimbriate lobes. Ovary superior, 5-angled, 5-celled; ovules many, on axile placentas; style short; stigma 5-lobed. Seeds without albumen; embryo almond-like.—*Fl. Cap.* ii. p. 597.

*B. Madagascariensis*, Lindl., was collected at Delagoa Bay by Forbes. A glabrous and subglaucous shrub, with oblong or obovate entire leaves, with revolute margins. Flowers green, in imperfect umbels.

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 ORDER XLV. **CRASSULACEÆ.**

Calyx free, 4–7-cleft or parted, imbricate. Petals inserted in the bottom of the calyx, as many as its lobes, regular, free or connate in an imperfectly tubular corolla, imbricate. Stamens inserted with the petals, as many or twice as many. Ovary (in the Cape genera) of 4–7 carpels, nearly apocarpous; styles terminal, subulate, free. Fruit of 4–7 follicles. Seeds albuminous.—Succulent plants, with fleshy, entire, rarely crenate or pinnate leaves. Flowers in cymes or solitary, showy or minute.

Tribe 1. ISOSTEMONES. Stamens as many as the petals.

Sepals and petals four.

Ovules 1 in each carpel . . . . . 1. HELOPHYTUM.

Ovules several in each carpel . . . . . 2. BULLIARDA.

Sepals and petals 5 (or rarely 6-9).

Carpels, each with a horn-like crest at the back of the styles . . . . . 3. DINACRIA.

Carpels not crested, tapering upwards.

Corolla subgamopetalous, salver-shaped.

Calyx bell-shaped, 5-toothed. Tube of corolla not longer than the calyx . . . . . 4. GRAMMANTHES.

Calyx deeply 5-cleft. Tube or corolla longer than the calyx. Anthers subsessile, in throat . . . . . 6. ROCHEA.

Corolla of 5-9 separate or slightly connate petals, spreading . . . . . 5. CRASSULA.

Tribe 2. DIPLOSTEMONES. Stamens twice as many as the petals.

Calyx 5-parted. Corolla tubular, 5-lobed . . . . . 7. COTYLEDON.

Calyx 4-parted, sessile, narrow. Corolla 4-lobed . . . . . 8. KALANCHOE.

Calyx inflated, shortly 4-lobed. Corolla 4-lobed . . . . . 9. BRYOPHYLLUM.

### 1. HELOPHYTUM, E. and Z.

Calyx 4-fid or 4-toothed. Petals 4, roundish or obovate, spreading. Stamens 4, shorter than the petals. Scales cuneate, truncate. Carpels 4; ovules solitary; styles short.—*Fl. Cap.* ii. p. 328.

Small marsh or water-plants, with weak, erect or floating, simple or slightly-branched stems. Leaves opposite, linear, spatulate or obovate. Flowers axillary, solitary or in cymes, white.—2 species, 1 of which is Eastern, the other diffused.

### 2. BULLIARDA, DC.

Character as *Helophytum*, except, carpels several-ovuled; follicles several-seeded.—*Fl. Cap.* ii. p. 329.

Small, mostly annual, 2-3-chotomous plants, growing in moist ground. Flowers small, white, terminal, and axillary.—5 Cape species, dispersed.

### 3. DINACRIA, Harv.

Calyx deeply 5-cleft. Petals 5, slightly connate at base, with broad, erect claws and spreading or recurved limbs. Stamens 5, shorter than the petals. Scales narrow-cuneate, truncate. Carpels 5, several-ovuled, each with a short dorsal horn at the summit behind the style; styles short, subulate. Follicles several-seeded.—*Fl. Cap.* ii. p. 330.

*H. filiformis*, Harv., the only species, is a small, 3-chotomous annual, native of the Western district. Leaves obovate or oblong, blunt, fleshy. Corymbs dense, terminal; flowers small, white.



4. **GRAMMANTHES**, DC.

Calyx bell-shaped, semi-5-fid. Corolla gamopetalous, the tube as long as the calyx; limb 5-6-lobed, spreading. Stamens 5-6, attached to the corolla-tube, shortly exserted. Carpels 5-6, many-ovuled, with subulate styles. Scales very minute or obsolete. Follicles many-seeded.—*Fl. Cap.* ii. p. 331.

A small, 2-chotomous, glabrous and glaucous annual, very variable in size of all parts; found in sandy soil throughout the Western districts. Stems rigid, wiry; leaves in distant pairs, fleshy, oblong ovate or sublinear. Flowers paniced, few or many, or solitary, terminal!, orange yellow or creamy-white, each petal commonly (not always) having a darker mark shaped like the letter V.

5. **CRASSULA**, Linn.

Calyx 5-parted or deeply 5-cleft, rarely 6-9-parted, spreading or erect. Petals 5 (rarely 6-9), free or connate below, spreading or erect, or erect with recurved points, ovate obovate oblong or panduriform or lanceolate, either simple at the apex or mucronulate or gland-tipped. Stamens 5 (rarely 6-9), shorter than the petals. Scales various. Follicles several-seeded.—*Fl. Cap.* ii. p. 332.

A large genus of succulent shrubs undershrubs or herbs, very variable in habit and size. Leaves opposite, mostly connate at base, broad or narrow, flat or round, more or less fleshy, glabrous pubescent or scaly, often cartilagineo-ciliate. Flowers white, red, rarely yellow, mostly of small size, solitary cymose or capitate.—About 100 species (probably more), dispersed, chiefly in dry ground.

6. **ROCHEA**, DC.

Calyx 5-parted or deeply 5-cleft. Corolla more or less perfectly gamopetalous, salver-shaped, its tube longer than the calyx; limb 5-parted, spreading. Stamens 5, adnate to the claws of the petals; anthers subsessile, in the throat of the tube. Scales very small. Carpels 5, several-ovuled; styles subulate or clavate. Follicles many-seeded.—*Fl. Cap.* ii. p. 368.

Shrubby or half-shrubby succulents. Leaves connate or sheathing at base, fringed with small cilia. Flowers handsome, crimson rosy white or pale yellow; some very sweetly scented.—4 species, all Western.

7. **COTYLEDON**, Linn.

Calyx 5-parted, much shorter than the tube of corolla. Corolla gamopetalous, with an ovate or linear, 5-angled tube, and a spreading or reflexed and revolute, 5-parted limb, spirally twisted in bud. Stamens 10, attached to the base of the corolla-tube, exserted or subincluded. Scales oval. Carpels 5, many-ovuled; styles subulate.—*Fl. Cap.* ii. p. 370.

Shrubby half-shrubby or herbaceous succulents. Leaves entire, opposite or scattered. Flowers showy, paniced or racemose, peduncled.—23 (perhaps more) Cape species, dispersed.

### 8. **KALANCHOE**, Adans.

Calyx 4-parted, sepals small, acute. Corolla monopetalous, salver-shaped, with an urceolate tube and a 4-parted, spreading limb. Stamens 8, attached to the base of the corolla. Scales 4, linear or oblong. Carpels 4, many-ovuled, with subulate styles. Follicles many-seeded.—*Fl. Cap.* ii. p. 378.

Succulent undershrubs, with opposite, toothed, entire or pinnatifid, fleshy leaves. Flowers paniced, yellow red or cream-colour.—6 Cape species (perhaps more), dispersed, chiefly Eastern.

### 9. **BRYOPHYLLUM**, Salisb.

Calyx inflated, 4-cleft nearly to the middle, valvate in bud. Other characters as in *Kalanchoe*.—*Fl. Cap.* ii. p. 380.

Succulent undershrubs. Leaves opposite, fleshy, petioled, imparipinnate or 1-foliolate; pinnules crenate. Flowers paniced, yellow changing to red. *B. tubiflorum*, H., a little-known species, grows at Delagoa Bay. Others, probably, may be discovered at Natal or in Zululand.

## ORDER XLVI. **HAMAMELIDEÆ.**

Trees or shrubs, with simple, petioled, penninerved, entire or toothed leaves. Stipules minute, deciduous. Flowers small. Floral characters nearly as in *Saxifragaceæ*; but the anthers are erect, 2-celled, each cell opening by a lateral, introrse valve, or splitting at the sides. Seeds solitary, albuminous.

1. **TRICHOCLADUS**. Flowers unisexual, spiked. Petals 5, long, linear. Stamens 5.

2. **GRUBBIA**. Flowers bisexual, capitate. Petals 4, ovate, hairy. Stamens 8.

### 1. **TRICHOCLADUS**, Pers.

Flowers polygamous, monœcious or diœcious; female flowers without petals. Calyx 5-cleft, adnate to the base of the ovary, persistent, valvate in bud. Petals 5, linear-clavate, much longer than the calyx, with revolute margins, valvate in bud. Stamens 5, alternate with the petals; filaments short, thickened in the middle; anthers erect, adnate, dehiscing by valves. Styles 2, spreading. Capsules didymous, 2-celled, endocarp separating from the sarcocarp. Seeds solitary, pendulous.—*Fl. Cap.* ii. p. 324.

South African shrubs, with opposite or alternate, ovate or oblong leaves,

and densely hairy or pubescent twigs and branches. Flowers white, in terminal spikes.—2 species, both Eastern and South-Eastern.

## 2. GRUBBIA, Berg.

Flowers perfect, capitate, in a 2-leaved involucre. Calyx adnate, its limb abortive, truncate. Petals 4, epigynous, deciduous, ovate, hairy outside, valvate in bud. Stamens 8, the 4 alternating with the petals rather longer, all slightly attached to the bases of the petals; anthers 2-celled, minute, roundish, opening by valves. Ovary inferior, crowned with a fleshy disk, when young (*fide* Dcne.) 2-celled, with a pendulous ovule in each cell; afterwards 1-celled (the septum breaking up), with an ovule pendulous from a central, columnar placenta. Nuts laterally connate, 1-seeded, crowned by the disk and style.—*Fl. Cap.* ii. p. 325.

Small, much-branched South African shrubs. Leaves opposite, with revolute margins, exstipulate. Flowers 3 or many, soldered together in bracteated heads.—4 species, 1 only going so far east as Uitenhage.

## ORDER XLVII. BRUNIACEÆ.

Flowers bisexual, regular, small or minute, sessile, spiked or capitate, rarely solitary, axillary. Floral characters nearly as in *Saxifragaceæ*, but the ovules are definite, either solitary or in pairs, very rarely 10.—Small South African shrubs, with needle-shaped or heath-like, rarely ovate, crowded, small, very entire, sessile or subsessile leaves, with a discoloured or withered tip (*ustulate*). Stipules 0.

Fruit 1-seeded, mostly indehiscent.

Ovary 1-celled. Style 1 . . . . . 1. BERZELIA.

Ovary 2-celled.

Style 1. Flowers axillary . . . . . 2. TITTMANNIA.

Style 1. Flowers solitary, terminal . . . . . 3. THAMNEA.

Styles 2. Flowers capitate or paniced . . . . . 4. BRUNIA.

Fruit dicoccous, or a splitting capsule.

Ovary 2-celled, 2-ovuled. Flowers capitate.

Styles 2. Petals free, or slightly cohering at base . . . . . 5. BERARDIA.

Style 1. Petals free . . . . . 6. STAAVIA.

Ovary 2-celled, 4-ovuled. Flowers in leafy spikes.

Flowers monopetalous, 5-lobed . . . . . 7. LONCHOSTOMA.

Flowers 5-petaled. Anthers apiculate . . . . . 8. LINCONIA.

Ovary 3-celled, 6-ovuled. Style trigonous. Flowers

in spike-like, terminal heads, red . . . . . 9. AUDOUINIA.

### 1. BERZELIA, Brongn.

Calyx adnate; lobes 5, rarely 4, unequal, gibbous. Petals 5, rarely 4, free. Stamens 5-4, longer than the petals. Ovary

half-inferior, oblique, 1-celled, 1-ovuled; style simple, with a subconical stigma. Fruit indehiscent, gibbous.—*Fl. Cap.* ii. p. 310.

Heath-like shrubs, with short, 3-angled, imbricate or spreading leaves. Flowers in globose, terminal heads, white.—8 species, dispersed.\*

## 2. TITTMANNIA, Brongn.

Calyx-tube spherical, wrinkled and glandular outside, adnate; limb 5-cleft, with scarious, erect segments. Petals with the claws 2-keeled inside; limb roundish-ovate, spreading. Ovary inferior, spherical, 2-celled, with a membranous septum, free at the edges; cells 2-ovuled; style simple, conical; stigma 2-dentate.—*Fl. Cap.* ii. p. 312.

A small shrub, with subumbellate branches. Leaves linear, subcylindrical, wrinkled, incurved, erect, imbricate. Flowers solitary in the axils of the upper leaves.—Native of Tulbagh and Stellenbosch districts.

## 3. THAMNEA, Brongn.

Calyx adhering to the ovary at base, free above, with 5 lanceolate, smooth, scarious, imbricate segments. Petals with 2-keeled claws, and an ovate, spreading limb. Stamens included. Ovary inferior, crowned by a fleshy disk, imperfectly 2-celled, 4- or 8-ovuled; style simple; stigma entire.—*Fl. Cap.* ii. p. 324.

*T. uniflora*, Soland., the only species,† is a small shrub, with filiform, erect, fastigate branches. Leaves very small, rhomboid, bluntly keeled, close-pressed, spirally inserted, the upper ones a little longer than the rest, forming an involucre to the terminal white flower.—A specimen of this, found by Masson, exists in the British Museum; no recent collector has found it.

## 4. BRUNIA, Linn.

Calyx half-adnate. Petals ovate or spatulate. Ovary half-inferior, 2-celled; ovules 1-2 in each cell; styles 2, diverging. Fruit indehiscent, rarely septicidal-dehiscent, 1-seeded.—*Fl. Cap.* ii. p. 313.

Small shrubs, erect or diffuse; in some the leaves are small, linear or subulate, and the flowers in heads; in others (Sect. *Beckea*) the leaves are larger, often expanded, ovate cordate or lanceolate, and the flowers in panicles.—10 species, chiefly Western, 2 or 3 going east to Uitenhage.

## 5. BERARDIA, Brongn., ex parte.

Calyx adhering to the ovary at base, free at apex, 5-cleft. Petals 5, free or cohering at base. Stamens 5; anthers with-

\* A species, discovered by Burchell, and not included in *Fl. Cap.*, is figured in Hook. Ic. Pl. t. 1014.—*J. D. H.*

† Two additional species, discovered by Burchell, are figured in Hook. Ic. Pl. t. 1011-13. All are Western.—*J. D. H.*

out any apical appendage. Ovary 2-celled; cells 1-ovuled; styles 2. Fruit dicoccous.—*Fl. Cap.* ii. p. 318.

Small, fastigiate shrubs. Leaves small, subulate or rhomboid, keeled, close-pressed, covering the stem on all sides. Flowers in terminal heads.—11 species, all west of Swellendam.

## 6. STAAVIA, Th.

Calyx adnate to the base of the ovary, free above, with 5 subulate lobes. Petals free. Ovary half-inferior, 2-celled; cells 1-ovuled; style simple; stigma 2-lobed. Fruit dicoccous.—*Fl. Cap.* ii. p. 321.

Small shrubs, with linear, spreading leaves. Flowers in terminal, flat-topped heads, involucreted by numerous, whitish floral leaves.—6 species, all from the Western districts.

## 7. LONCHOSTOMA, Wikstr.

Calyx attached to the half-inferior ovary, 5-cleft. Corolla monopetalous, tubular, 5-cleft; segments clawed, spreading. Stamens 5, very short, inserted in the mouth of the corolla; anthers oblong, 2-celled, cells divergent at base. Ovary pubescent, 2-celled; cells 2-ovuled; styles 2 or 1. Fruit splitting from the base, 2-4-valved; seeds 4, netted.—*Fl. Cap.* ii. p. 316.

Erect shrubs. Leaves imbricate, ovate or lanceolate, leathery. Flowers in terminal, leafy spikes, rosy.—3 species, all Western.

## 8. LINCONIA, Linn.

Calyx adhering to the ovary, with a 5-cleft limb; lobes short, membranous, smooth. Petals oblong, convolute, enclosing the stamens; anther-cells divergent at base, their connective with a conical gland at tip. Ovary half-inferior, 2-celled; cells 2-ovuled; styles 2. Fruit dicoccous.—*Fl. Cap.* ii. p. 317.

Erect, fastigiate shrubs. Leaves spreading or loosely imbricate, linear oblong or ovate-oblong, leathery. Flowers in terminal, leafy spikes, white.—3 species, dispersed.

## 9. AUDOUINIA, Brongn.

Calyx adhering to the ovary, 5-cleft; lobes large, imbricate. Petals with a long, 2-keeled claw, and a spreading, roundish limb. Stamens included. Ovary half-inferior, 3-celled; cells 2-ovuled; style 3-angular; stigmas 3, short.—*Fl. Cap.* ii. p. 323.

*A. capitata*, Brongn., the only species, grows on the mountains round Simonstown, etc. Leaves spirally inserted, linear, imbricate, 3-angled, scabrous. Flowers crimson, in oblong spikes or heads.

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ORDER XLVIII. **HALORAGÆ.**

Flowers minute, uni- or bisexual. Calyx-tube adnate; limb 2-3-4-toothed or entire. Petals 2-3-4 (or 0), epigynous, with valvate or imbricate æstivation, deciduous. Stamens as many or twice as many as the petals, and inserted with them, rarely fewer. Ovary inferior, 1-3-4-celled; ovules solitary or in fours, pendulous; style, if any, separate, very short; stigmas villous or feathery. Fruit nut-like or fleshy, 1-4-celled. Seeds pendulous; embryo in the axis of fleshy albumen.

- Leaves on long petioles, all radical. Peduncles scape-like, bearing a compound spike of minute flowers . . . . . 1. **GUNNERA.**  
 Leaves sessile, entire or toothed. Flowers axillary.  
 —A creeping or prostrate herb . . . . . 2. **SERPICULA.**  
 Leaves whorled, pectinate-parted. Flowers in terminal spikes.—Water plants . . . . . 3. **MYRIOPHYLLUM.**

1. **GUNNERA**, Linn.

Flowers unisexual or bisexual. Calyx-tube terete or angular; limb 2-3-lobed. Petals 2 or 0, coriaceous, deciduous. Stamens 1-2, opposite the petals; anthers 2-celled. Ovary 1-celled, 1-ovuled; stigmas 2, long, simple, papillose. Fruit succulent, with a bony endocarp. Albumen copious; embryo very minute.—*Fl. Cap.* ii. p. 571.

Nearly stemless herbs, with long-petioled, reniform, many-nerved, sub-radical leaves. Scapes tall, ending in a compound spike or thyrsus of many minute flowers; the female spikelets occupying the lower half of the spike.—*G. perpensa*, our only species, grows in wet ditches throughout the colony.

2. **SERPICULA**, Linn.

Flowers unisexual.—Male: Calyx minute, 4-toothed. Petals 4, oblong, concave. Stamens 4 or 8.—Female: Calyx-tube 4-angled, 8-ribbed; limb 4-toothed. Petals and stamens 0. Ovary 1-celled; ovules 4, pendulous; stigmas 4, long and feathery. Fruit 8-ribbed, fleshy, with a bony endocarp, 1-seeded.—*Fl. Cap.* ii. p. 572.

*S. repens*, Linn., our only species, grows in moist places throughout the colony. Stems decumbent, creeping. Leaves alternate or the lower opposite, sessile, lanceolate or oval, entire or toothed, often reddish. Stamens 4.

3. **MYRIOPHYLLUM**, Linn.

Flowers unisexual, rarely bisexual.—Male: Calyx 4-parted. Petals 4, ovate, caducous. Stamens 4-6-8.—Female: Calyx-limb 4-parted. Petals 0 or very minute. Stamens abortive or 0. Ovary 4-celled; stigmas 4, long, compressed, papulose

on the inner face. Fruit 4-lobed, of 4 nut-like carpels.—*Fl. Cap. ii. p. 572.*

Water plants, with opposite or whorled leaves, the submerged ones pectinate-parted. Flowers in terminal leafy spikes, or axillary.—*M. spicatum*, Linn., a widely-distributed species, occurs in several South African rivers.

## ORDER XLIX. **BALANOPHOREÆ.**

Flowers unisexual, in dense heads spikes or panicles.—Male: Perianth 3-parted, valvate in bud, or 0. Stamens 1-3, opposite the segments of the perianth.—Female: Perianth epigynous 3-lobed or obsolete. Ovary inferior, 1-celled; ovule solitary, pendulous; styles filiform, 1-2 or 0. Fruit dry or succulent, indehiscent, the seed filling the cavity. Embryo very minute, in fleshy or friable albumen.—Fleshy, fungous-like root-parasites of hot countries. Leaves represented by fleshy, coloured scales. Flowers either bracteate, involucre, or naked.

Flowers monœcious, in dense bracteate spikes . . . 1. MYSTROPETALON.  
Flowers dicecious, the males paniced; females concrete, in globose heads . . . . . 2. SARCOPHYTE.

### 1. **MYSTROPETALON**, Harv.

Flowers monœcious, in dense bracteate spikes.—Male: Perianth 3-parted, 2-labiate, the segments with long claws and spatulate limbs, valvate in bud, the 2 posterior connate. Stamens 2, opposite to and inserted on the posterior segments, conniving; anthers 2-celled, extrorse, opening longitudinally; pollen cubical.—Female: Perianth epigynous, tubular, 3-toothed. Ovary seated in a cup-like, fleshy disk or receptacle, 1-ovuled; style filiform, exserted, deciduous; stigma capitate, 3-lobed. Fruit subtended by the unchanged receptacle, with a thin, juicy epicarp, and a crustaceous endocarp, 1-seeded. Embryo very minute, in the base of easily-friable albumen.—*Fl. Cap. ii. p. 573.*

Stem simple, fleshy, densely imbricated with linear-spatulate scales, ending in a dense spike of flowers. Female flowers in the lower, males in the upper part of the spike. Bracts 3 under each flower, 1 anterior, 2 lateral. Bracts orange. Flowers bright red.—2 species: *M. Polemanni*, from Howhoek Pass; *M. Thomii*, from Caledon Baths.

### 2. **SARCOPHYTE**, Sparm.

Flowers dicecious.—Male flower paniced; perianth 3-lobed, valvate in bud. Stamens 3, opposite the lobes; filaments free; anthers multilocular.—Female flowers in globose heads, densely crowded. Perianth 0. Ovary seated on a subglobose common

receptacle, becoming concrete, unilocular ; stigma sessile, peltate. Syncarpium (compound fruit) globose, berry-like.

*S. sanguinea*, Sparm., the only species, grows on the roots of *Ekebergia Capensis* and *Acacia Caffra*, in Uitenhage and Albany. Stems 9-10 inches high, an inch or more in diameter, dull flesh-coloured or reddish, branching, imbricated with scales below, ending in a paniced inflorescence. Smell offensive, like that of rotten fish. Male flowers purplish. Fruit like a mulberry.

## ORDER L. RHIZOPHOREÆ.

Flowers bisexual, regular. Calyx-tube adnate to the ovary or nearly free ; limb of 4-12 valvate lobes. Petals as many as the calyx-lobes, alternate with them, inserted below them, often cut or jagged. Stamens as many, twice as many or more ; filaments separate ; anthers erect. Ovary more or less inferior, rarely quite superior, 2- or more celled ; ovules in pairs, or few in each cell, pendulous ; style simple. Fruit 1- or few-seeded. Seeds with or without albumen.—Trees or shrubs, with opposite leaves and axillary flowers, either maritime or subaritime.

Calyx-tube adnate to the ovary. Petals entire emarginate or 2-fid. Seed germinating within the fleshy, indehiscent fruit, exalbuminous.

Calyx 4-fid. Petals 4 . . . . . 1. RHIZOPHORA.

Calyx 5-12-fid. Petals 5-12, 2-fid. . . . . 2. BRUGUIERA.

Calyx-tube free. Petals 5, multifid. Capsule 3-celled . 3. WEINIA.

### 1. RHIZOPHORA, Linn.

Calyx-tube obovate, adhering to the ovary ; limb of 4 oblong, persistent segments. Petals 4, oblong, coriaceous, entire or emarginate, conduplicate, with a double row of long, woolly, marginal hairs. Stamens 8 ; anthers nearly sessile, linear-oblong. Ovary 2-celled ; ovules 2 in each cell ; style conical, short, 2-furrowed ; stigma 2-toothed. Fruit ovate or oblong, girt near the base with the persistent calyx-lobes, at length perforated at the apex by the germinating embryo. Seed exalbuminous.—*Fl. Cap.* ii. p. 513.

Trees, growing on muddy seashores in hot countries, with quite entire, leathery leaves.—*R. mucronata*, Lam. (Mangrove), occurs near Natal.

### 2. BRUGUIERA, Lam.

Calyx-tube turbinate, adhering to the ovary ; limb of 5-12 (or 13) persistent segments. Petals as many, oblong, 2-fid, coriaceous, conduplicate, each embracing 2 stamens, woolly on the margin. Stamens twice as many as the petals, inserted in pairs opposite to them ; filaments unequal, half as long as the

petals; anthers linear or sagittate. Ovary 2-4-celled; ovules 2 in each cell; style nearly as long as the stamens; stigma 2-4-toothed. Fruit crowned by the calyx-lobes, at length perforated by the germinating embryo. Seed exalbuminous.—*Fl. Cap.* ii. p. 514.

Trees and shrubs of muddy seashores, in warm countries.—*B. gymnorhiza*, Lam., grows near Natal.

### 3. WEIHEA, Spr.

Calyx free, deeply 4-5-parted, the lobes valvate. Petals 4-5, inserted within the calyx-tube, wedge-shaped, palmately multifid-lacerate. Stamens 20-30, inserted below the petals, 1-seriate; filaments subulate; anthers oblong, erect, 2-celled. Ovary free, sessile, globose, 3-celled; ovules 2 in each cell, pendulous; style simple, persistent; stigma 3-toothed. Berry dry, girt by the persistent calyx, 3-4-celled, at length dehiscent. Seeds solitary in each cell, albuminous.—*Spr. Syst.* ii. 594. *Richæia*, *Thouars*. *Anstrutheria*, *Gard. in Calc. Journ.* iv. p. 344. *t.* 4; *Walp. Ann.* ii. p. 173.

African and Asiatic trees or shrubs, not strictly littoral, but growing near the sea. Leaves opposite, with interpetiolar, deciduous stipules, and axillary flowers. Mr. Gerrard has recently sent from Natal a species of this genus, nearly allied to *W. Madagascariensis*, if it be not the same; its leaves are ovate-lanceolate, acuminate, denticulate, and flowers axillary, shortly pedicelled, the pedicels 2-bracted at base. Calyx-lobes silky outside; stamens about 20.

## ORDER LI. COMBRETACEÆ.

Flowers either unisexual or bisexual. Calyx-tube adnate to the ovary, limb 4-5-lobed. Petals inserted at the summit of the calyx-tube. Stamens as many or twice as many as the petals. Ovary inferior, 1-celled; ovules few, pendulous; style filiform. Fruit a winged or ribbed dry drupe.—Trees or shrubs, with simple, entire, exstipulate leaves. Flowers in spikes racemes or heads.

Flowers without petals . . . . . 1. TERMINALIA.  
Flowers with 4-5 petals.

Calyx short, 4-toothed. Petals 4. Stamens 8 . . . 2. COMBRETUM.

Calyx short, 5-lobed. Petals 5. Stamens 10. . . . 3. POIVREA.

Calyx with a very long, slender tube, 5-toothed. Petals 5. Stamens 10. . . . . 4. QUISQUALIS.

### TRIBE 1. TERMINALIEÆ.

#### 1. TERMINALIA, Linn.

Flowers often polygamous. Calyx-limb deciduous, bell-shaped, 5-cleft; lobes acute. Petals 0. Stamens 10, in a

double row, longer than the calyx. Ovary 2-3-ovuled. Style filiform, acutish. Drupe not crowned by the calyx, usually dry, indehiscent, 1-seeded.—*Fl. Cap.* ii. p. 508.

Trees or shrubs. *T. sericea*, Burch., our only species, has oblong, silky leaves crowded round the ends of the branches, and flowers in spikes shorter than the leaves.—Aapjes river.

## 2. COMBRETUM, Linn.

Calyx funnel-shaped; tube as short as the ovary or longer; limb bell-shaped, 4-lobed, deciduous. Petals 4, small, inserted between the lobes of the calyx. Stamens 8, in 2 rows, exserted. Ovary 2-5-ovuled; style exserted, acute. Fruit 4-winged, 1-celled, 1-seeded, indehiscent. Seed pendulous.—*Fl. Cap.* ii. p. 508.

Trees or shrubs. Leaves often opposite. Spikes terminal or axillary, sometimes capitate; flowers small, greenish.—10 species, all Eastern or from Natal.

## 3. POIVREA, Comm.

Limb of the calyx funnel-shaped, 5-lobed, deciduous. Petals 5. Stamens 10, protruded. Ovary 2-3-ovuled; style filiform, protruded, acute.—*Fl. Cap.* ii. p. 512.

*P. bracteosa*, Hochst., our only species, is a Natal shrub, 8-10 feet high, with ovate or ovate-oblong glabrous leaves, and nodding, bracteate spikes of reddish flowers.

## 4. QUISQUALIS, Rumph.

Tube of the calyx slender, produced much beyond the ovary; limb 5-lobed. Petals 5, oblong or roundish, obtuse, longer than the calyx-teeth, imbricate. Stamens 10, inserted within the throat of the calyx, those opposite the petals longest. Ovary 4-ovuled; style filiform, exserted, its base adhering to the calyx-tube. Drupe dry, 5-furrowed and 5-ribbed, 1-seeded. Seed pendulous.—*Fl. Cap.* ii. p. 512; *Thes. Cap.* t. 130.

*Q. parviflora*, Gerr., our only species, discovered by Mr. Gerrard in the Natal country, has opposite, oval-oblong, acute, thinly pubescent or glabrate leaves and terminal spikes of slender flowers. Petals small, shortly oblong. Anthers subsessile, in 2 widely-separated rows.

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## ORDER LII. MYRTACEÆ.

Flowers bisexual. Calyx-tube adhering to the ovary; limb 4-5-parted or obsoletely lobed. Petals 4-5. Stamens indefinite, inserted with the petals on the fleshy margin of the calyx-tube. Ovary inferior, 2- or several-celled, with few or many ovules; style filiform; stigma simple. Fruit either a succulent berry or a dry capsule. Seeds without albumen.—Trees or shrubs. Leaves mostly opposite, quite entire, penni-



nerved, with an intramarginal vein, almost always pellucid-dotted and aromatic or resin-scented, exstipulate. Flowers solitary or in cymes panicles or heads.—The Order is very abundant in South America and Australia, much less so in Asia, and very scantily represented in Africa.

Tribe 1. LEPTOSPERMEÆ. Fruit dry, capsular, many-celled, dehiscent. Stamens much-exserted, free. Capsules 2-3-celled . 1. METROSIDEROS.

Tribe 2. MYRTEÆ. Fruit a fleshy berry. . Leaves dotted. Calyx-limb almost entire or repand. Petals concrete into a calyptra . . . . . 2. SYZYGIUM.  
Calyx-limb more or less deeply 4-5-parted. Petals separate.

Calyx-tube turbinate. Petals 5. Flowers in terminal cymes . . . . . 3. ACMENA.

Calyx-tube globose. Petals 4 (very rarely 5). Peduncles axillary . . . . . 4. EUGENIA.

Tribes 3. BARRINGTONIÆ. Fruit berried or dry, valveless. Leaves without pellucid dots.

Petals 4. Stamens in many rows, connate at base . 5. BARRINGTONIA.

### TRIBE 1. LEPTOSPERMEÆ.

#### 1. METROSIDEROS, R. Br.

Calyx-tube adhering to the ovary, not angular; limb 5-cleft. Stamens 20-30, free, very long, exserted. Style filiform. Capsules 2-3-celled; cells many-seeded. Seeds wingless.—*Fl. Cap.* ii. p. 521.

Trees or shrubs.—*M. angustifolia*, Sm., our only species, is common by riversides in many parts of the colony. Its leaves are linear-lanceolate; peduncles axillary, umbellate. Flowers yellowish.

### TRIBE 2. MYRTEÆ.

#### 2. SYZYGIUM, Gærtn.

Calyx-tube obovate; limb nearly entire or repandly-lobed. Petals 4-5, roundish, joined into a cap (or calyptra) and falling off either in that state from the calyx, or immediately after expansion. Stamens numerous, distinct. Ovary 2-celled, with few ovules in each cell; style simple. Berry 1-celled, 1- or few-seeded. Seed globose; cotyledons large, fleshy, nearly hemispherical; radicle small, inserted between the cotyledons below the middle, and concealed by them.—*Fl. Cap.* ii. p. 521.

Trees or shrubs. Leaves opposite, quite entire, glabrous.—*S. cordatum*, Hochst., our only species, is a Natal tree, 30-40 ft. high, with subsessile, elliptic-cordate, leathery leaves, veiny and paler beneath. Cymes terminal, many-flowered.

3. **ACMENA**, DC.

Calyx-tube turbinate; limb shortly bell-shaped, either subentire or more or less deeply 5-lobed, involute in bud. Petals 5, small, separate. Stamens numerous, distinct. Ovary 3- or 2-celled; cells many-ovuled; style simple, long or short. Berry globose or oval, 1-seeded.

Australian or Indian shrubs.—*A. Gerrardi*, Harv. mss., lately found in Zululand by Mr. Gerrard, is nearly allied to *A. Zeylanica*. It is arborescent, with ovate-oblong, acuminate, closely-veined leaves, and terminal, 3-choctomous-multifid cymes; calyx limb deeply 5-lobed; ovary 2-celled.

4. **EUGENIA**, Linn.

Calyx-tube nearly globose; limb divided down to the ovary into 4, rarely 5 segments. Petals 4 or rarely 5. Stamens numerous, distinct. Ovary 2-celled; cells many-ovuled. Berry nearly globose, crowned by the calyx, when ripe 1-celled, rarely 2-celled. Seeds 1-2, large, roundish; cotyledons very thick and confluent; radicle very small.—*Fl. Cap.* ii. p. 521.

Trees or shrubs. Leaves opposite, pellucid-dotted. Peduncles axillary or terminal, 1- or several-flowered.—About 8 species (some undescribed), all Eastern or from Natal.

## TRIBE 3. BARRINGTONIÆ.

5. **BARRINGTONIA**, Forst.

Calyx-tube ovate; limb 2-3-4-parted; lobes ovate, obtuse, concave, persistent. Petals 4, coriaceous, attached to the ring at the base of the stamens. Stamens numerous, in several rows; filaments filiform, long, distinct, combined at the base into a short ring, all bearing anthers. Ovary 2-4-celled, crowned by an urceolus sheathing the base of the style; ovules 2-6 in each cell; style simple. Fruit fleshy or corky, more or less 4-angled, crowned by the limb of the calyx, 1-celled. Seed solitary; embryo fleshy, not separable into cotyledons and radicle, formed of 2 concentric, combined layers.—*Fl. Cap.* ii. p. 523.

Tropical trees, growing near the sea.—*B. racemosa*, Roxb., occurs near Natal.

ORDER LIII. **MELASTOMACEÆ**.

Flowers bisexual, regular. Calyx-tube enclosing the ovary, either quite adnate to it, or attached by its ribs or angles, leaving interspaces, or rarely quite free; limb with valvate or imbricate æstivation. Petals on the summit of the calyx-tube, as many as its lobes, imbricate in bud. Stamens inserted with

the petals, either once or usually twice as many, those opposite the petals sometimes abortive; filaments inflexed in bud; anthers 2-celled, opening by terminal pores, or rarely splitting. Ovary usually plurilocular (rarely unilocular); ovules numerous; style simple; stigma undivided. Fruit a capsule or berry. Seeds without albumen.—Leaves opposite, entire, usually 3- or more ribbed, without pellucid dots, exstipulate.

\* Undershrubs, with 3–5-ribbed, rough leaves.

Calyx-limb persistent, with accessory teeth; anthers with a club-shaped appendage at base . . . . . 1. ARGYRELLA.  
Calyx-limb deciduous; tube covered with bristly scales; anthers with a 2-fid or 2-parted appendage at base . . . . . 2. DISSOTIS.

\*\* Trees and shrubs with 1-nerved, glabrous leaves.

Calyx-tube ovoid; stamens 8; ovary 1-celled . . . . . 3. MEMECYLON.  
Calyx-tube cylindrical; stamens 5; ovary 5-celled . . . . . 4. OLINIA.

### 1. ARGYRELLA, Naud.

Calyx-tube bell-shaped; limb of 5 ovate acute lobes, equaling the tube, twisted imbricate in æstivation, alternating with as many subulate accessory teeth (not stellato-setose at apex). Petals obovate. Stamens 10, unequal; anthers linear-subulate, opening by a single pore, recurved, undulate along the inner side, the 5 larger with the connective very long, produced beyond the insertion of the filament into a clavate appendage; the 5 smaller with a very short 2-dentate connective, confluent with the apex of the filament. Ovary 5-celled, half-inferior, the upper half free, 5-lobed, tomentose; style filiform. Capsules contained in the persistent calyx. Seeds cochleate, striate.—*Naud. in Ann. Sc. Nat., Ser. 3. xiii. p. 300.* Osbeckia, *ex parte, Fl. Cap. ii. p. 518.*

*A. canescens* (*Osbeckia canescens*, E. Mey. !; Graham in Bot. Mag. ! t. 3790; *O. Umlaasiana*, Hochst.) is an erect, virgate branching undershrub, found near Natal. All parts pale, tomentose with very minute, stellate hairs. Leaves sessile or subsessile, oblong-lanceolate, 5-nerved, netted-veined beneath. Flowers purple, handsome, corymboso-paniculate.

### 2. DISSOTIS, Benth.

Calyx-tube ovoid, covered with palmately-cut scales, adhering by its ribs to the ovary or at length free; limb 4–5-parted, deciduous, many-bristled at the apex. Petals obovate, ample. Stamens 10, unequal; anthers linear-subulate, opening by a single pore, subrecurved, the 5 larger with the connective very long, produced beyond the insertion of the filament into a deeply 2-lobed or 2-parted appendage; the 5 smaller with a short connective, equally 2-lobed at base. Ovary crowned with bristles, 4–5-celled; style equal or

slightly thickened upwards. Capsules included in the urceolate calyx-tube, 5-celled. Seeds cochleate.—*Benth. in Niger Flora*, p. 346. *Osbeckia*, *Fl. Cap. ex parte*, ii. p. 518.

To this genus belong *Osbeckia eximia*, Sond., and *O. phæotricha*, Hochst., both found near Natal; the former has 5-merous, panicled flowers; the latter 4-merous, capitate.

### 3. MEMECYLON, Linn.

Calyx-tube hemispherical or subglobose, adnate to the ovary; limb very short or cup-like, obsoletely 4-toothed or subentire. Petals 4, oval. Stamens 8, mostly longer than the petals; filaments filiform; anthers short, with a thick connective, forming a conical spur at base, opening at base by a short slit. Ovary inferior, 1-celled; ovules on a central placenta; style filiform; stigma simple. Berry crowned with the limb of calyx, frequently 1-seeded. Seeds with convolute cotyledons.—*Endl. Gen. n.* 6269; *Benth. Hongkong Flora*, p. 117.

Trees or shrubs, chiefly Asiatic. Twigs 4-sided, with tumid nodes. Leaves opposite, impunctate, 1-ribbed, coriaceous, quite entire. Flowers axillary, tufted or subcapitate.—A species (as yet undescribed) of this genus has recently been found, by Mr. Gerrard, near Natal.

### 4. OLINIA, Th.

Calyx tubular, adhering to the ovary; limb of 5, rarely 4, minute teeth. Petals 5-4. Scales 5-4, minute, obovate, alternating with the petals. Stamens 5-4; filaments very short, adnate to the calyx below the scales; anthers subglobose, 2-celled, introrse, with a thick connective. Ovary inferior, 5-4-celled; cells 3-ovuled; style subulate; stigma obtuse. Fruit drupaceous, subglobose, truncate, 3-4-celled; cells mostly 1-seeded. Seeds with a spirally rolled embryo.—*Fl. Cap.* ii. p. 519.

*O. cymosa*, Thunb., is a glabrous shrub or tree, with 4-sided twigs. Leaves opposite, petioled, coriaceous, green, shiny above, impunctate, 1-ribbed and penninerved, quite entire, varying in shape from obovate obtuse to ovato-lanceolate acuminate. Cymes terminal or axillary, densely many-flowered. Flowers white.—Found in kloofs, throughout the colony, and beyond the Eastern frontier.

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## ORDER LIV. LYTHRARIÆ.

Flowers bisexual, rarely polygamous. Calyx free, persistent, tubular or bell-shaped, 4-12-toothed, often ribbed. Petals on the summit of the calyx-tube, deciduous. Stamens usually inserted at or below the middle of the calyx-tube, as many or twice as many as the petals; rarely inserted at the summit of the tube and opposite the petals. Ovary free, 2-6-

celled, with several ovules in each cell; style single, filiform. Capsules enclosed in the base of the persistent calyx-tube, or girt with the calyx. Seeds without albumen.—Herbs or shrubs, with simple, entire, exstipulate leaves.

**Herbaceous plants.**

Stamens 2. A minute, subsimple plant; leaves subulate . . . . . 1. *SUFFRENIA*.

Stamens 4 or more.

Calyx bell-shaped. Capsules longer than the calyx . . . 2. *AMMANNIA*.

Calyx tubular, cylindrical. Ovary 2-celled . . . 3. *LYTHRUM*.

Calyx bell-shaped. Ovary 4-celled. Capsules hidden in the calyx-tube . . . . . 4. *NESSEA*.

**Shrubs or trees.**

Stamens 5, opposite the petals, and inserted with them; leaves pellucid-dotted, aromatic; flowers small, paniced . . . . . 5. *HETEROPYXIS*.

**TRIBE 1. LYTHRARIÆ. (Gen. 1-4.)**

**1. *SUFFRENIA*, Bellard.**

Calyx bell-shaped, 4-toothed, with 4 alternate, exterior, very minute or obsolete alternating teeth, the inner teeth ovate, acute, erect. Petals 4 (or 0?), very minute, fugacious. Stamens 2, inserted within the calyx-tube, included; filaments short; anthers subglobose. Ovary sessile, 2-celled; ovules numerous; style filiform; stigma capitate. Capsules oblong, girt by the calyx, 2-valved.—*Thes. Cap. t.* 189.

Small marsh plants.—*S. Capensis*, H., our only species, was found by Mr. Cooper, on the Draakensberg, Orange Free State. Stems 1-2 inches high, tufted, subsimple. Leaves opposite, linear-subulate, 2-toothed. Flowers axillary,  $\frac{1}{4}$  line long. Petals either 0 or not seen by me.

**2. *AMMANNIA*, Linn.**

Calyx 2-bracteolate, bell-shaped, 4-14-nerved, with 4-7 erect, flat teeth, and frequently as many spreading minute or obsolete alternating teeth. Petals 4-7. Stamens as many or twice as many as the petals. Ovary 2-5-celled; style simple, persistent; stigma capitate. Capsules girt by the calyx, ovato-globose, delicately membranous, either splitting across or opening by valves.—*Fl. Cap. ii. p.* 515.

Small, much-branched herbs, growing in wet soil. Leaves opposite, quite entire. Flowers small, axillary, sessile or pedicelled, usually pink or red.—2 South African species, both Eastern.

**3. *LYTHRUM*, Linn.**

Calyx bracteated, cylindrical, ribbed or striate, with 4-6 erect broad teeth, and as many spreading, smaller, alternating teeth. Petals 4-6. Stamens inserted in the middle or at the base of the calyx-tube, twice as many as the petals or rarely



only as many. Ovary 2-celled; style filiform; stigma capitate. Capsule oblong, enclosed in the calyx, 2-celled, many-seeded.—*Fl. Cap.* ii. p. 516.

Herbs, occasionally half-shrubby, with opposite alternate or whorled, entire leaves. Flowers axillary, purple or purplish, often handsome; petals quickly withering.—3 species, of which 2 are Eastern and endemic, the third nearly cosmopolitan.

#### 4. NESÆA, Comm.

Calyx hemispherical, bracted or bractless; ribbed or striate, with 4–6 erect, triangular inner teeth, and as many smaller, narrow, or horn-like, spreading outer teeth. Petals 4–6. Stamens 8–12, nearly equal. Ovary sessile, globose, 4-celled. Capsules globose or subglobose, covered by the calyx, many-seeded.—*Fl. Cap.* ii. p. 517.

Herbs, with lanceolate or oblong, nearly sessile, obtuse or acute, entire leaves. Peduncles axillary, longish, 3-flowered or capitate, and many-flowered at the summit.—*N. floribunda*, Sd., our only species, grows near Natal. Flowers capitate.

### TRIBE 2. HETEROPYXIDÆ. (Gen. 5.)

#### 5. HETEROPYXIS, Harv.

Flowers polygamous.—Male: Calyx cup-shaped, with 5 erect, triangular lobes. Petals 5, ovate, inserted in the throat of the calyx, subsessile, pellucid-dotted. Disk, lining the calyx-tube, thin. Stamens 5, inserted with the petals and opposite to them!; filaments subulate; anthers 2-celled, versatile. Abortive ovary 2- rarely 3-celled, many-ovuled; style short; stigma obtuse.—Female: Calyx 10-nerved, with 5 erect, triangular lobes, and as many minute, alternating denticles. Petals and stamens as in ♂, but the 2-celled anthers abortive. Ovary 2-celled; ovules many, on axile placentas; style filiform, much-exserted; stigma capitate. Capsules oblong, 2-celled, girt by the persistent calyx. Seeds (unripe only seen).—*Thes. Cap. t.* 128.

An aromatic tree or large shrub, found near Natal, with alternate, short-petioled, lanceolate, pellucid-dotted, penninerved leaves, and dull white fragrant flowers in terminal or axillary panicles. When I published this genus in the 'Thesaurus' I was only cognizant of the male flowers, in which, however, the ovary, ovules and style, though abortive, were so completely organized that the flower passed as bisexual. Recently I have received from my zealous and most obliging friend Mr. Gerrard, the true female flower and half-ripe fruit. These afford an additional calycine character, which completely reconciles *Heteropyxis* to *Lythrarieæ*.

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### ORDER LV. ONAGRARIÆ.

Flowers bisexual, rarely diœcious. Calyx-tube adnate with

the ovary, its limb 4-5-lobed, valvate or open in bud. Petals on the margin of the calyx-tube or 0. Stamens as many or twice as many as the calyx-lobes, and opposite them. Ovary inferior, 2-4-5-celled; style mostly filiform (rarely splitting); stigma 2-4-5-lobed. Fruit a capsule or berry. Seeds exalbuminous or nearly so.—A considerable Order, chiefly of temperate climates. Leaves opposite or alternate, exstipulate, simple, entire, or variously lobed or cut. Flowers either axillary or in racemes or spikes, often showy. The well-known garden-flowers *Oenothera* and *Fuchsia* belong to this Order.

Tribe 1. JUSSIÆ. Flowers bisexual. Petals spirally twisted in bud (sometimes 0). Ovary 4-5-celled; ovules numerous; style filiform. Fruit capsular. Seeds many, not winged.

Limb of the calyx persistent; capsule septicial.

Stamens 8-10 . . . . . 1. JUSSIÆ.

Stamens 4-5. . . . . 2. LUDWIGIA.

Limb of the calyx deciduous; capsule loculicidal.

Calyx-tube much produced beyond the ovary. Seeds nude . . . . . 3. CENOTHERA.

Calyx-tube not longer than the ovary. Seeds with a silky tuft . . . . . 4. EPILOBIUM.

Tribe 2. MONTINIÆ. Flowers diœcious. Petals imbricate. Ovary imperfectly 2-celled; ovules numerous; style splitting through the middle. Fruit capsular, 2-valved. Seeds broadly winged.

A glabrous, small shrub, with alternate, simple leaves . . . 5. MONTINIA.

Tribe 3. TRAPÆ. Flowers bisexual. Petals imbricate. Ovary 2-celled; ovules solitary; style filiform. Fruit a hard, 1-seeded nut.

Water plants, with rhomboid, long-petioled, floating leaves, and spinous or horned nuts . . . . . 6. TRAPA.

## TRIBE 1. JUSSIÆ. (Gen. 1-4.)

### 1. JUSSIÆA, Linn.

Calyx-tube not produced beyond the ovary; the limb 4-5-parted, persistent. Petals 4-5. Stamens 8-10. Stigma capitate. Capsule 4-5-celled, crowned by the calyx-lobes and opening longitudinally between the ribs. Seeds numerous, small, naked.—*Fl. Cap.* ii. p. 504.

A considerable genus, chiefly of tropical America.—2 species, one of them endemic, occur at Natal. Leaves alternate, entire. Flowers axillary, solitary, yellow.

### 2. LUDWIGIA, Linn.

Characters as in *Jussiaea*, except stamens 4-5. Petals wanting in *L. palustris*.—*Fl. Cap.* ii. p. 504.

2 species, neither endemic, found in the Eastern district and Natal: *L. palustris* (without petals) and *L. jussiaeoides* (with petals).

3. **ŒNOTHERA**, Linn.

Calyx-tube much produced beyond the ovary, deciduous; limb 4-parted. Petals 4, obcordate. Stamens 8. Stigma 4-lobed or capitate. Capsule various in form and texture, 4-celled, 4-valved, many-seeded.—*Fl. Cap.* ii. p. 505.

A large genus, of American origin.—2 species ("Evening Primroses") are naturalized near Capetown.

4. **EPILOBIUM**, Linn.

Calyx-tube not produced beyond the ovary; limb deeply 4-lobed or 4-parted, deciduous. Petals 4, obovate or obcordate. Stamens 8. Stigma clavate or 4-lobed. Capsule linear, 4-sided, 4-celled, 4-valved, loculicidal. Seeds with a tuft of silky hairs at one end.—*Fl. Cap.* ii. p. 506.

Herbs of the temperate zones. Leaves alternate or opposite, entire or serrulate; flowers axillary or in terminal bracteate spikes, purple or rosy, rarely yellowish.—3 species, of which one is said to be endemic.

## TRIBE 2. MONTINIEÆ. (Gen. 5.)

5. **MONTINIA**, Linn.

Flowers dicæious. Calyx-tube wholly adnate to the ovary; limb short, persistent, 4-toothed, with open æstivation. Petals 4, ovate, epigynous, imbricate, deciduous. Disk (in the male) fleshy, 4-angled. Stamens 4; filaments short; anthers adnate, slitting lengthwise; pollen trigonous. Ovary inferior, imperfectly 2-celled, with very prominent, fleshy, multiovulate placentas, filling up the greater part of the cavity; style single, short; stigma large, deeply 2-lobed. Capsule ligneous, crowned by the style (now become 2-parted) and the calyx-limb, 2-celled, splitting through the centre. Seeds 4–6 in each cell, compressed, with a broad, membranous, marginal wing.—*Fl. Cap.* ii. p. 307.

*M. acris*, Linn., the only species, is a glabrous, somewhat glaucous shrub, common all over the colony. Leaves varying from oblong to lanceolate or linear, entire, margined, 1-nerved, veinless. Flowers small, white, the males in terminal corymbs, the females mostly solitary.

## TRIBE 3. TRAPEÆ. (Gen. 6.)

6. **TRAPA**, Linn.

Calyx-tube adnate to the lower part of the ovary; the limb half-superior, 4-parted, valvate in bud, then spreading, persistent, with spinous lobes. Petals 4, inserted under a fleshy, epigynous disk, imbricate in bud, the margins plaited and wavy, spreading, deciduous. Stamens 4, inserted with the

petals. Ovary half-inferior, 2-celled; ovule 1 in each cell; style cylindrical, simple; stigma obtuse. Fruit a somewhat horny nut, 2-4-spined from the enlarged, spinous calyx-lobes, often with supplementary spines or prominences on the disk, 1-celled, 1-seeded. Seed without albumen.

Water plants, floating on lakes and ponds.—*T. bispinosa*, Roxb., occurs at Natal, where its singularly-formed fruits, which are full of farinaceous substance, are eaten by the Zulu Kaffirs. The submerged leaves are opposite, pinnatisect, with very narrow lobes, the floating crowded in a rosulate cluster, petioled, rhomboid, toothed, the petioles swollen and hollow in the middle, forming floats; flowers axillary, solitary. The black-brown oval nut is crowned with 2 straight barbed horns; and its either side, in the specimens I have received, is curiously furnished with prominences arranged like the features of a diabolical face; a long, hooked nose, a pair of peering eyes, and a pursed-up mouth. Specimens sent to me by Mr. Sanderson, of Natal.

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## ORDER LVI. TURNERACEÆ.

Flowers bisexual. Calyx tubular, free, 5-cleft. Petals 5, inserted in the tube or at its summit, twisted in bud, deciduous. Stamens 5, alternating with the petals. Ovary 1-celled, with 3 parietal placentas; styles 3, separate or partially connate; stigmas fimbriate. Fruit capsular, 3-valved; valves placentiferous. Seeds albuminous.—A small Order; scarcely differing from *Passifloreæ*.

### 1. TURNERA, Plume.

Calyx coloured, tubular-funnel-shaped, more or less deeply 5-parted. Petals inserted in the throat of the calyx. Stamens 5; style 3-fid at the apex; stigma multifid. Capsule ovate or oblong, 3-valved.—*Fl. Cap.* ii. p. 599; *Thes. Cap.* t. 140.

Undershrubs or shrubs, chiefly American.—*T. Capensis*, H., our only species, is a very dwarf, hairy plant, with crowded, lanceolate, serrate leaves, and axillary, small, white flowers. It grows near the Aapjes river.

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## ORDER LVII. LOASACEÆ.

Flowers bisexual, regular. Calyx adnate to the ovary; limb 5-lobed. Petals epigynous, 10, in 2 rows, those of the outer row concave. Stamens indefinite, in many parcels. Ovary 3-celled.—An Order almost exclusively American, chiefly near the west coasts of North and South America.

### 1. KISSENIA, R. Br.

Calyx-tube 10-ribbed; limb 5-parted, the lobes equal, en-

larged in fruit, persistent. Petals 10, deciduous, inserted at the summit of the calyx-tube, 5 outer roundish, concave, 5 inner smaller, ligulate, angularly bent. Stamens indefinite, those of the outer row barren, with cordate bases. Ovary turbinate, 3-celled; cells 1-ovuled; styles 3, erect, subconnate. — *Fl. Cap.* ii. p. 502.

The only species is *K. spathulata*, Br. (*Fissenia Capensis*, Endl.; Thes. Cap. t. 98), a robust, bristly undershrub, with alternate, petioled, 5-7-lobed, toothed leaves, and rather large yellow flowers, disposed in scorpioid, terminal, bracteate cymes. It is a native of Namaqualand, the mouth of the Gariep, etc., and extends thence northwards through tropical Africa to Arabia.

### ORDER LVIII. PASSIFLOREÆ.

Flowers bisexual or unisexual. Calyx monophyllous, free, tubular or rotate; limb 3-4-5-cleft or parted. Petals as many as the calycine lobes, often herbaceous on the outside, continuous with the apex of the calyx-tube, or inserted much within the tube, persistent, separate or (rarely) united in a bell-shaped corolla. Corona various, exterior to the fertile stamens. Stamens as many or twice as many as the calycine lobes, free or monadelphous; anthers versatile or fixed. Ovary mostly stipitate, 1-celled; ovules many or few, on parietal placentas; styles as many as the placentas; stigmas thickened. Fruit a berry or capsule. Seeds on long cords, mostly arillate, with a furrowed and ridged seed-coat, albuminous.—Climbing (rarely erect) shrubs or herbs.

Flowers bisexual.

Calyx 3-parted. Petals 3, half-herbaceous. Co-

rona double, the outer fringed . . . . . 1. TRYPHOSTEMMA.

Flowers monœcious or diœcious.

Diœcious. Corolla 0 or polypetalous.

Calyx 5-fid. Disk with 5 conspicuous glands . . . 2. MODECCA.

Calyx 5-parted. Disk without glands . . . 3. OPHIOCAULON.

Monœcious. Calyx 3-5-parted. Corolla monope-  
talous, 3-5-lobed, herbaceous.

A vine-like climber. Capsule slender, pod-like . . . 4. CERATIOSICYOS.

A suberect, low herb. Capsule ovoid . . . 5. ACHARIA.

#### 1. TRYPHOSTEMMA, Harv.

Flowers hermaphrodite. Tube of the perianth short, obconical; limb 6-parted, in 2 rows, the 3 inner segments unequal, 2 of them larger, herbaceous, and white-edged, the third linear and petaloid. Corona perigynous, annular, double, the outer fringed, the inner entire or crenulate, bearing the stamens. Stamens 5, within the rim of the inner corona; filaments subulate; anthers erect, sagittate, 2-celled. Ovary



subsessile, 1-celled; ovules few, on 3-4 parietal placentas; styles 3-4, filiform; stigmas capitate. Capsule shortly stipitate, membranous, 3-4-valved, few-seeded. Seeds pendulous, with a membranous aril, areolate-corrugate.—*Fl. Cap.* ii. p. 499; *Thes. Cap. t.* 51.

*T. Sandersoni*, H., the only species, grows near Natal. Stems subsimple, 4 inches to 4 feet high, the taller somewhat climbing. Leaves alternate, sessile or subsessile, 2-stipuled, ovate or ovato-lanceolate, distantly toothed, netted-veined. Flowers 2-5 lines diameter, greenish, in short axillary racemes.

## 2. MODECCA, Lam.

Flowers diœcious. Calyx tubular-conical, bell-shaped, 4-5-lobed. Corolla of 4-5, ovate oblong or linear, sometimes fimbriate petals, smaller than the calycine lobes, and inserted either at the summit of the calyx-tube or far within it.—Male: Stamens 4-5, inserted in the bottom of the calyx and opposite its lobes; filaments subulate, connate in a ring at base; anthers introrse, 2-celled, erect. A rudiment of an ovary. Glands 4-5, opposite the petals.—Female: Abortive stamens 5, subulate, girding the ovary. Ovary stipitate or subsessile, 1-celled; ovules numerous, on 3 parietal placentas; style short or 0; stigma dilated or fimbriate. Capsule thinly fleshy (leathery when dry), subglobose, 3-valved, many-seeded. Seeds arillate, corrugate.—*Fl. Cap.* ii. p. 499 (species 1 and 2); *Thes. Cap. t.* 12.

Mostly vine-like climbers, often with tendrils. Leaves alternate, undivided or lobed, the petioles mostly 2-glanded at the apex. Stipules obsolete or none. Peduncles axillary; flowers small, greenish.—About 6 (some undescribed) South African species, all from Natal or Zululand.

## 3. OPHIOCAULON, Hook. f.

Flowers diœcious. Calyx-tube very short; lobes spreading, marked with black lines. Petals 5, subserrate.—Male: Stamens 5, almost hypogynous; filaments very short; anthers narrow-linear. Glands of disk 0 or very obscure.—Female: Abortive stamens 5, subulate. Ovary sessile, 1-celled; stigmas 3, flabellate; ovules numerous, on 3 parietal placentas. Capsule sessile, coriaceous, 3-valved, many-seeded.

An African genus of climbing shrubs, with smooth, snake-like stems, full of gum. Leaves alternate, green, glaucous beneath, entire or lobed. Tendrils simple or branched. Flowers small, greenish, in long, peduncled, axillary cymes.—1 species, *Modecca? gummifera*, Harv. *Fl. Cap.* ii. 501, a native of the Eastern districts.

## 4. CERATIOSICYOS, Nees.

Flowers monœcious.—Male: Calyx-tube short; limb of

4-5 slender, subulate lobes. Corolla continuous with the calyx-tube, bell-shaped, 4-5-lobed. Stamens 4-5, inserted in the base of the calyx, free, alternate with the lobes of the corolla, dilated upwards; anthers adnate to a club-shaped connective, the cells slightly separated, introrse. Glands as many as the stamens, and alternating with them, oblong, fleshy.—Female: Calyx-lobes obsolete. Corolla as in the male. Glands as in the male, but smaller. Ovary stipitate, unilocular; ovules numerous, on 4-5 parietal placentas; stigmas 4-5, sessile, channelled, 2-lobed. Capsule pod-like, slender, 4-5-valved, several-seeded.—*Fl. Cap.* ii. p. 501.

*C. Ecklonii*, Nees, the only species, is a slender, nearly glabrous climber, growing in the Eastern district and at Natal. Leaves palmately 5-7-lobed, membranous. Flowers axillary, greenish, the males in racemes, the females solitary.

### 5. ACHARIA, Th.

Flowers monœcious.—Male: Calyx 3-4-parted. Corolla bell-shaped, 3-(rarely 4-)lobed, herbaceous, continuous with the short calyx-tube. Stamens adnate to the tube of the corolla for more than half their length, as many as the lobes and alternate with them; filaments dilated upwards, subexserted; anthers adnate to a broad, 2-lobed connective, the cells separated, introrse. Glands 3-4, fleshy, in the base of the perianth, alternating with the stamens.—Female: Calyx and corolla as in the male, but enlarged in fruit, persistent. Ovary sessile, with 3 glands at base, 1-celled; ovules few, on 3-4 parietal placentas; style 3-4-cleft; stigmas 3-4, channelled, 2-lobed. Capsule shortly stipitate, ovoid, membranous, 3-4-valved, few-seeded. Seeds pendulous, with a small arillus.—*Fl. Cap.* ii. p. 501.

*A. fragioides*, Th., the only species, is a small, thinly-pubescent, branching herb, growing in shady places of Uitenhage and Albany. Leaves alternate, petioled, 3-lobed, and cut. Flowers small, green, axillary.

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## ORDER LIX. CUCURBITACEÆ.

Flowers unisexual. Calyx 5-lobed, adnate. Corolla mostly monopetalous, 5-lobed or 5-parted, continuous with the summit of the calyx-tube. Stamens inserted within or at the mouth of the calyx-tube, 5-3-2, either free or with the anther-cells monadelphous, or the anthers and filaments variously cohering; anthers usually linear, adnate, extrorse, cells straight curved flexuous or conduplicate. Ovary inferior, usually with prominent, parietal placentas, often meeting in the centre, sometimes 2-3-celled; ovules many, usually horizontal; styles

united or distinct; stigmas 1-3, entire or 2-lobed or parted. Fruit a succulent or dry berry or gourd. Seeds lying in pulp or corky or fibrous substance, exalbuminous.—Herbs, with prostrate or climbing, very long stems, and simple or branched tendrils. Leaves alternate, petioled, exstipulate, palminerved, often multifid or lobed, sometimes 3-5-foliolate.

Tribe 1. CUCURBITEÆ. Ovules horizontal. Stamens usually three. Fruit decaying or bursting irregularly, rarely 3-valved. Seeds not winged.

§ 1. *Cucumerineæ*. Anther-cells flexuous or conduplicate (rarely straight in *Cucumis* and *Momordica*).

Corolla rotate or bell-shaped; limb divided wholly or nearly to the base.

Calyx-tube short.

Connective of anthers prolonged beyond the cells . . . . . 1. CUCUMIS.

Connective not prolonged.

Calyx-tube without internal scales. Tendrils usually branched . . . . . 2. CITRULLUS.

Calyx-tube with 2 scales between the stamens. Tendrils simple . . . . . 3. MOMORDICA.

Calyx-tube long (at least in the female).

Fruit a few-seeded berry . . . . . 4. TROCHOMERIA.

Gourd dry and fibrous within; seeds flat . . . . . 5. LUFFA.

Gourd fleshy; seeds with tumid border . . . . . 6. LAGENARIA.

Corolla bell-shaped, 5-lobed to or above the middle, rarely below it.

Tendrils simple. Fruit a berry . . . . . 7. CEPHALANDRA.

Tendrils forked or branched. Fruit a gourd . . . . . 8. CUCURBITA.

§ 2. *Melothrieæ*. Anther-cells straight. Fruit a berry. (See *Cucumis* and *Momordica* in Tribe 1.)

Anthers 3, all 2-celled. Seeds flat . . . . . 9. ZEHNERIA.

Anthers 3, 2 of them 2-celled, the other 1-celled.

Female flowers with 3 staminodia. Style with a tumid annulus at base. Seeds tumid . . . . . 10. RHYNCHOCARPA.

Female flower with 3 staminodia. Style without disk at base. Seeds tumid . . . . . 11. PISOSPERMA.

Female flower without staminodia. Style with a cup-shaped disk at base. Seeds compressed . . . . . 12. MUKIA.

Tribe 2. ZANONIEÆ. Ovules and seeds pendulous. Stamens 4, anthers 1-celled, straight, cohering in pairs. Fruit opening at the apex. Seeds with a broad wing . . . . . 13. GERRARDANTHUS.

## TRIBE 1. CUCURBITEÆ.

### 1. CUCUMIS, Linn.

Flowers monœcious or diœcious.—Male: Calyx bell-shaped, 5-fid. Corolla spreading, its limb 5-parted. Stamens 3, inserted at the base of the corolla, one 1-celled; anthers flexuous, rarely straight, terminated by a papillose, lobed prolongation of the connective.—Female: Calyx and corolla as in the male;

stigmas 3, thick. Fruit a gourd, 3- or spuriously 6-celled, many-seeded. Seeds oval, compressed, not margined.—*Fl. Cap.* ii. p. 494.

Annuals or perennials, scabrous, with succulent stems, rarely wanting tendrils, and angular or deeply-lobed leaves. Flowers axillary, solitary or tufted, yellow.—9 ascertained Cape species, several others from Natal, of which incomplete specimens have as yet only reached us.

## 2. CITRULLUS, Schrad.

Flowers monœcious.—Male: Calyx bell-shaped, deeply 5-fid. Corolla 5-parted, flattish. Stamens 3, inserted at the base of the corolla, 2 bilocular, deeply parted, the third unilocular; connective without any terminal appendage; anther-cells flexuous.—Female: calyx and corolla as in the male. Ovary with 3 prominent placentas, villous or smooth; style 3-fid; stigmas 3, thick. Fruit a globose, rarely oblong, 3- or 6-celled, many-seeded gourd. Seeds oval, compressed, with obtuse margins.—*Fl. Cap.* ii. p. 492.

*C. vulgaris*, a prostrate plant, with deeply 3-5-lobed leaves, forked tendrils, and axillary yellow flowers, occurs on sandy flats in many places. It is the "Kaffir Water-melon" and "Bitter Apple" of the colonists, and a wild variety of the common European and Asiatic Water-melon.

## 3. MOMORDICA, Linn.

Flowers monœcious or diœcious.—Male: Panicked and ebracteate or bracteate or solitary, with the peduncle bearing a large, sessile, clasping bract. Calyx 5-cleft, with a very short tube, closed at the base with 2 or 3 horizontal or incurved scales. Corolla 5-parted to the base, much longer than the calyx. Stamens 3, one 1-celled; anther-cells flexuous or conduplicate, rarely straight, free or connate. Ovary with 3 placentas; style simple; stigmas 3. Gourd fleshy, not fibrous, prickly, often bursting when ripe, with or without elasticity. Seeds compressed or tumid, enveloped in a fleshy pulp.—*Fl. Cap.* ii. p. 491.

Annual or perennial climbers, with petiolate, lobed or compound leaves, simple, rarely 2-fid tendrils and yellow or white flowers.—4 ascertained Cape species, dispersed, and some imperfectly known, undescribed.

## 4. TROCHOMERIA, Hook. f.

Flowers monœcious or diœcious. Calyx with a cylindrical or funnel-shaped tube, and a 5-parted limb. Corolla spreading, 5-parted to the base; the lobes sometimes very long. Stamens 3; filaments inserted within the calyx-tube; anthers subexserted or included, connivent; cells conduplicate, 2 bilocular, the third unilocular. Female perianth as in the male.

Ovary 3-celled; ovules few; style cylindrical; stigma fleshy, 3-lobed. Fruit a berry?—*Thes. Cap. t.* 96, 182, 183.

Perennial climbers, with simple tendrils and more or less deeply-lobed leaves. Several have a large ciliate or pectinate bract at the base of the peduncle, others want it.—To this new genus are referred the following species of 'Flora Capensis':—*Zehneria Garcini* (*Trochomeria Hookeri*, H.), *Z. pectinata*, *Z. Wyleyana*, *Z. macrocarpa*, *Z. debilis*, and *Lagenaria? sagittata*. The true *Zehneria Garcini* of Stocks is different from the species so named in 'Flora Capensis.'

### 5. LUFFA, Tournef.

Flowers monœcious, rarely diœcious. Calyx-tube in the male bell-shaped or turbinate, in the female oblong-clavate; limb 5-toothed. Petals 5, somewhat deciduous.—Male: Stamens 3, exserted, 2 bilocular, deeply 2-parted, the third unilocular; anther-cells very flexuous, marginal on a very broad connective.—Female: Stamens abortive. Style 3-cleft; stigmas reniform or 2-parted. Gourd at length dry and fibrous within, usually opening by the falling of a terminal lid, sometimes indehiscent. Seeds broadly oval, flattened.—*Fl. Cap. ii.* p. 490.

Climbers, with angular stems, branching tendrils, palmate-lobed leaves and large, yellow flowers. Male flower racemose; female solitary.—2 Cape species, both Eastern.

### 6. LAGENARIA, Ser.

Flowers monœcious. Calyx bell-shaped; segments broadish. Corolla (white) 5-parted; petals obovate, springing from within the calycine rim.—Male: Stamens 3, included; anthers sessile; cells very flexuous.—Female: Style scarcely any; stigmas 3, sessile, thick, 2-lobed. Gourd hard, dry, indehiscent. Seeds numerous, obovate, compressed, with a tumid border.—*Fl. Cap. ii.* p. 489.

Climbing, softly-pubescent annuals. Tendrils 2-fid. Leaves cordate, nearly entire; flowers axillary. Fruit often large, pear-shaped or clavate.—*L. vulgaris* occurs spontaneously in gardens of Kaffraria.

### 7. CEPHALANDRA, Schrad.

Flowers diœcious.—Male: Calyx short, campanulate, 5-toothed. Corolla bell-shaped, semi-5-fid, veiny. Filaments 3, inserted at the mouth of the calyx, free, but the connectives connate, united into a globose, antheriferous head; anthers distinct, 2 of them 2-celled, the other 1-celled; cells flexuous.—Female: Calyx and corolla as in the male. Ovary oblong, with 3 placentas; style with a thick, lobed stigma. Fruit a many-seeded, smooth berry. Seeds compressed, obliquely subattenuated at base.—*Fl. Cap. ii.* p. 492.



Four ascertained species, some others imperfectly known, all Eastern and from beyond the Eastern frontier. Herbaceous, climbing perennials, with 5-lobed leaves, simple tendrils, yellow flowers, and purple fruit.

### 8. CUCURBITA, Linn.

Flowers monœcious.—Male: Calyx short, bell-shaped, 5-fid. Corolla bell-shaped, 5-fid. Stamens 3; filaments 4; anthers one 1-celled and two 2-celled, very sinuous.—Female: Calyx and corolla of male. Sterile stamens. Ovary 3–5-celled, many-ovuled; style 3-fid; stigmas thickened, 2-lobed. Gourd many-seeded. Seeds ovate, compressed, with a tumid margin.

Annuals, with branched tendrils and cordate or 3–5-lobed leaves.—To this belong the universally-cultivated Gourds and Pumpkins of gardeners.

### 9. ZEHNERIA, Endl.

Flowers monœcious or diœcious.—Male: Calyx bell-shaped, 5-toothed. Corolla spreading, 5-parted. Stamens 3 (sometimes 4), inserted deeply within the calyx-tube, separate; anthers all 2-celled, on a broad fringed connective.—Female: Calyx and corolla as in the male. Staminodia 3, club-shaped. Style inserted in a tumid, 3-lobed epigynous disk, 3-fid; stigmas 3, fleshy. Fruit a few-seeded, subglobose berry, with a tough skin. Seeds flattish.—*Fl. Cap.* ii. p. 485 (in part).

Perennial climbers, with simple tendrils and cordate, angular or lobed leaves. Flowers small, white; the males peduncled, racemose; female in subsessile imperfect umbels or tufts.—5 Cape species, dispersed.

### 10. RHYNCHOCARPA, Schrad.

Flowers monœcious or diœcious.—Male: Calyx bell-shaped, 5-fid. Corolla spreading, 5-parted. Stamens 3 (rarely 4), inserted in the tube of the calyx; filaments short; anthers free or connivent, two 2-celled, the other 1-celled; cells oblong, straight, the connective rarely crested.—Female: Calyx and corolla as in the male. Staminodia 3. Style inserted in a tumid, epigynous disk. Fruit a sharply-beaked or taper-pointed, few-seeded, 3-celled berry. Seeds tumid.—*Fl. Cap.* ii. p. 483 (Coniandra).

Tuberous-rooted, climbing herbs, with simple tendrils, palmate or digitate-parted, rarely reniform, entire leaves, and small, greenish flowers.—7 species, dispersed.

### 11. PISOSPERMA, Sond.

Flowers monœcious, aggregated on radical, leafless branches, the males racemose, the female subsolitary.—Male: Calyx-tube bell-shaped; lobes 5, lanceolate. Petals 5, oblong. Stamens 3; filaments short; two anthers 2-celled, the other 1-celled; cells linear, straight.—Female: Calyx and corolla as

in the male. Staminodia 3. Style 1, without any epigynous disk; stigma thick, lobed. Fruit a small berry with a tough coat, subglobose, apiculate, 3-celled, 6-12-seeded. Seed tumid. —*Fl. Cap.* ii. p. 498.

A tuberous-rooted perennial. The flowers are borne on very short, radical branches close to the ground. They are pale yellow, striped with green; the males numerous, females few. When the little fruit is almost ripe, the root sends out long, twining, leafy stems, bearing small, simple tendrils. Leaves pedatifid, with linear lobes; the middle lobe very long. —*P. Capense*, Sond., grows beyond the Eastern frontier.

## 12. MUKIA, Arn.

Flowers monœcious.—Male: Calyx campanulate, 5-toothed. Corolla 5-parted; lobes obtuse. Stamens 3, inserted in the tube of the calyx; filaments free; two anthers 2-celled, the other 1-celled; cells linear, straight, cohering; connective produced into a conical point.—Female: Calyx and corolla as in male. Ovary ovoid, setulose, with 2-3 placentas; style short, inserted in an annular, fleshy, epigynous disk. Staminodia 0. Fruit a small, smooth or bristly, globose, few-seeded berry. Seeds oblong-oval, subcompressed, surrounded by a broad or narrow rim, scrobiculate.—*Fl. Cap.* ii. p. 488.

*M. scabrella*, Arn., a common annual plant of tropical Asia, occurs near Natal. Stem climbing, with simple tendrils, and angled or lobed hairy leaves. Flowers small, yellow; the males tufted, females solitary or aggregated.

## TRIBE 2. ZANONIEÆ.

## 13. GERRARDANTHUS, Harv.

Flowers dicecious?—Male: Calyx small, rotate, 5-lobed. Corolla rotate, 5-parted to the base; lobes linear-oblong, fleshy, 2 rather larger than the others. Stamens 4, and 1 sterile; filaments separate; anthers 1-celled, linear, cohering in pairs.—Female: Calyx and corolla as in the male. Ovary long, tapering at base, 3-cornered, with thick placentas and several pendulous ovules on each placenta. Fruit a long, funnel-shaped, nearly dry, at length membranous gourd, 3-valved at top. Seeds many, flat, with a crustaceous testa, and long membranous wing.

*G. megarrhiza*, Dene. and Harv., the only species, grows in the Natal colony. It has a large, placentiform, tuberous root, lying on the surface of the soil, 3-4 feet diameter, 1-2 feet thick, slightly acid and bitter, and used, as Mr. Gerrard informs me, "by the Kaffirs for various medicinal purposes; among others, they give it to heifers, after the first calf, to increase the quantity of milk; but it appears to deteriorate the quality, for, it is said, that cows give no butter during the time they are taking the root." Stem woody, tuberculated, very long, rising to the tops of the highest trees, the branches hanging down in graceful, pendulous wreaths. All parts of

stem and foliage are glabrous. Branchlets slender, angular. Tendrils long, 2-fid. Leaves petioled, cordate, quite entire, 5-7-nerved at base, membranous, mucronate. Flowers small; the males on long pedicels, in subumbellate fascicles.—This very remarkable plant is named in honour of W. T. Gerrard, Esq., who collected it in May, 1862, on the Nonoti, and to whom I am indebted for specimens of male and female flowers and ripe seeds. For several years Mr. Gerrard\* has devoted himself, with an ardour which repeated attacks of fever and repeated thwartings from the unruly conduct and superstition of the natives have not abated, to the exploration of the natural history of Zululand; and the pages of 'Flora Capensis' and of 'Thesaurus Capensis,' so far as published, bear ample witness to his success in botanical discovery. He has also, in conjunction with Mr. M'Ken, most generously contributed nearly 2000 species of dried plants to the Dublin University Herbarium. I have, therefore, peculiar pleasure in inscribing this genus to his honour. As a genus it will stand next to *Alsomitra*, Wall., but it differs in habit and foliage, as well as in several characters of flowers and fruit. My friend Professor Decaisne, who has succeeded in raising young plants at the Jardin des Plantes, joins me in the specific name selected. The seedlings, after forming a few leaves, have already acquired tubers as large as a pigeon's egg.

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### ORDER LX. BEGONIACEÆ.

Flowers monœcious.—Male: Perianth 4-leaved, coloured. Stamens many; anthers adnate, with a thickened connective.—Female: Perianth with a 3-winged tube, adnate to the ovary, and a 4-9-parted, coloured limb. Ovary inferior, 3-celled, with many axile ovules; stigmas 3, subsessile, fleshy. Capsules 3-winged, membranous, opening by slits; seeds numerous, without albumen.—Herbs, with swollen nodes, juicy stems and unequal-sided leaves, with membranous stipules.

#### 1. BEGONIA, Linn.

Capsules opening by arched or longitudinal slits along the face of the cells. Placentas from the inner angle of the ovarian cells.—*Fl. Cap.* ii. p. 480.

A large genus, chiefly American and Asiatic. Leaves alternate, petioled, palmate-nerved, subentire, toothed or lobed, unequal-sided, frequently semicordate at base, often scaly and brightly coloured on the lower surface. Flowers cymose, mostly pink or rosy.—About 5 South African species, all Eastern and from Natal.

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### ORDER LXI. CACTEÆ.

Flowers bisexual. Perianth many-leaved, imbricating, its tube adnate to the ovary. Stamens indefinite. Ovary inferior,

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\* Since the above was written, Mr. Gerrard left Natal upon a scientific expedition into the interior of Madagascar, where he died of fever in 1866.—*J. D. II.*

1-celled, with several parietal placentas; style filiform, terminal; stigmas as many as the placentas. Fruit succulent. Seeds mostly without albumen.—Succulent, mostly leafless plants, almost all of American origin.

### 1. RHIPSALIS, Gærtn.

Tube of the perianth not produced beyond the ovary; limb rotate, of 12–18 short, scale-like lobes, the outer resembling sepals, the inner petaloid. Stamens many, about equalling the lobes of perianth. Style filiform; stigmas 3–6, radiating. Berry globose, smooth, often crowned with the dried-up limb of the perianth. Seeds numerous, exalbuminous.—*Fl. Cap.* ii. p. 479.

Slender succulents, growing on trees, with whip-like (or leaf-like, often jointed) stems, and small, lateral flowers.—*R. cassytha*, or some closely-allied species, grows in Caffraria and at Natal; branches slender, green, terete, pendulous, remotely scaly.

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## ORDER LXII. FICOIDEÆ.

Flowers regular, bisexual. Calyx gamosepalous, 4–5–8-cleft, adnate or free, mostly coloured within. Petals either very numerous or, more usually, 0. Stamens perigynous or subhypogynous, definite or indefinite, free. Ovary inferior or superior, 2–5–20-celled or of 2–5 separable cocci; ovules many or few or solitary, usually on long cords, attached to the base or inner angle of the cavity; stigmas as many as the carpels. Fruit capsular or nut-like. Embryo curved round a central, mealy albumen.—Herbaceous or suffruticose plants, with more or less fleshy, mostly quite entire leaves, with or without stipules. Flowers either showy or minute.

**Tribe 1. MESEMBRYANTHEÆ.** Petals very numerous, narrow. Stamens many. Ovary inferior, 5- or many-celled. Capsules 5–20-celled, opening by as many valves.—Leaves sessile, mostly opposite, without stipules.

Herbs or shrubs, with fleshy leaves and bright

flowers . . . . . 1. MESEMBRYANTHEMUM.

**Tribe 2. TETRAGONIÆÆ.** Petals 0. Ovary inferior. Drupe 1–9-celled, indehiscent, often winged.—No stipules.

Herbs or shrubs, with flat, alternate leaves . . . 2. TETRAGONIA.

**Tribe 3. AIZOIDEÆ.** Petals 0. Stamens definite or indefinite, mostly perigynous. Ovary superior. Capsules loculicidal.—No stipules.

Stamens perigynous.

Stamens about 20, in the base of the calyx-tube. Ovary 5-celled; ovules 2—many in

each cell . . . . . 3. AIZOON.

- Stamens 10-40, in parcels on the top of the funnel-shaped calyx-tube. Ovary 2-celled; cells 1-ovuled . . . . . 4. ACROSANTHES.
- Stamens 8-10, alternating in pairs with the lobes of the rotate calyx. Ovary 2-5-celled; cells 1-ovuled . . . . . 5. GALENIA.
- Stamens hypogynous.
- Stamens 5. Ovary 3-celled; ovules solitary . . . . . 6. PLINTHUS.
- Tribe 4. MOLLUGINÆ. Petals mostly 0. Stamens 5, 10 or many, mostly hypogynous. Ovary superior. Capsule loculicidal.—Leaves usually stipulate.
- Ovary 3-5-celled; each cell with several ovules.
- Calyx 5-parted nearly to the base.
- Sepals unequal, cuspidate. Petals 15-20, shorter than the calyx. Seeds arilled at base . . . . . 7. ORYGIA.
- Sepals subequal, ovate. Seeds not arilled.
- Stigmas linear. Stipules obsolete . . . . . 8. MOLLUGO.
- Stigmas obovate, fleshy. Stipules scarious, lacerate, conspicuous . . . . . 9. PHARNACEUM.
- Calyx 5-fid to the middle or above it . . . . . 10. CÆLANTHUM.
- Ovary 1-2-3- or 5-celled; cells 1-ovuled.
- Calyx 5-parted, segments quite entire.
- Ovary 3-5-celled . . . . . 11. PSAMMATROPHA.
- Ovary 1-celled . . . . . 12. ADENOGRAMMA.
- Calyx 4-parted, segments fimbriato-lacerate . . . . . 13. POLPODA.
- Tribe 5. GIESEKIEÆ. Petals 5 or 0. Stamens 5 or many, hypogynous. Ovary superior. Fruit of 2-5 separable nuts.
- Petals 0. Ovary of 3-5 carpels. Nuts warted or crested . . . . . 14. GIESEKIA.
- Petals 3-5 (rarely wanting). Ovary of 2 plano-convex carpels.
- Carpels flat, with a marginal wing . . . . . 15. SEMONVILLEA.
- Carpels hemispherical, wingless, dorsally pitted . . . . . 16. LIMBEUM.
- Tribe 6. Petals 0. Stamens 5 or many, mostly perigynous. Ovary superior, 1-5-celled; cells 1- or many-ovuled. Capsule circumscissile.
- Stamens perigynous; ovary 2-3-celled. Flowers sessile, axillary . . . . . 17. TRIANTHEMA.

### 1. MESEMBRYANTHEMUM, Linn.

Calyx 5-, rarely 2-8-lobed, its tube attached to the ovary, the lobes unequal, usually leaf-like. Petals very numerous, linear, in one or many rows, united at the base. Stamens innumerable, in many rows, united at base. Ovary 4-20, but usually 5-celled; stigmas 4-20, usually 5. Capsules 5-20-celled, opening like a star at the summit. Seeds very many.—*Fl. Cap.* ii. p. 387.

A vast genus, chiefly South African, natives of dry sands, Karroo plains, etc.; few to the east of the Great Fish river. Leaves mostly opposite,



thick and fleshy. Flowers mostly terminal, white red or yellow, some dazzlingly brilliant, opening mostly in bright sunshine.—About 300 species.

## 2. TETRAGONIA, Linn.

Calyx 4-cleft, rarely 3-5-cleft, its tube adhering to the 4-5-angled ovary; lobes coloured within. Petals wanting. Stamens variable in number, sometimes definite, sometimes fascicled; anthers oblong or linear. Ovary inferior, 3-9-celled, by abortion 1-2-celled; ovules solitary; styles as many as the ovarian cells, very short. Drupe or nut winged or horned, indehiscent, 1-9-celled. Seeds solitary.—*Fl. Cap.* ii. p. 460. •

Herbs or undershrubs, with alternate, flat, fleshy, undivided, usually quite entire leaves, and axillary, sessile or stalked, green flowers.—23 Cape species, dispersed.

## 3. AIZOON, Linn.

Calyx 5-parted, coloured within. Petals 0. Stamens about 20, in the bottom of the calyx, and disposed in 3-5 tufts. Ovary free, 5-angled, 5-celled; cells with 2 or many ovules; styles or stigmas 5. Capsules 5-celled, opening at the top, like a star; cells 2-10-seeded.—*Fl. Cap.* ii. p. 469.

Small herbs or undershrubs. Leaves opposite or alternate, fleshy, quite entire. Flowers in the axils of the leaves or forks of the stem, mostly sessile.—7 species, dispersed.

## 4. ACROSANTHES, E. and Z.

Calyx 5-parted, coloured within. Petals 0. Stamens 10-40, 2-seriate, in parcels on the top of the funnel-shaped calyx-tube, the outer longer; filaments capillary; anthers linear. Ovary free, 2-celled; ovules solitary; stigmas 2, filiform. Capsules subglobose, enclosed in the persistent calyx, 1-celled, 2-valved. Seeds 1-2, fixed to the base.—*Fl. Cap.* ii. p. 473.

Decumbent, forked, glabrous undershrubs. Leaves subconnate, opposite or in fours. Flowers axillary or in the forks, solitary, peduncled.—4 species, all Western.

## 5. GALENIA, Linn.

Calyx 4- or 5-parted, coloured within. Petals 0. Stamens 8-10, in 4 or 5 sets, or 1 or a pair alternating with the calyx-lobes; anthers versatile, didymous; cells turgid. Ovary free, 2-5-celled, or by abortion 1-celled; cells 1-ovulate; styles 2-5. Capsules 2-5-celled, or by abortion 1-celled, 3-5-furrowed or 2-edged, dehiscent, or, if unilocular, indehiscent. Seeds solitary, shining, striate, fixed to long cords rising from the base of the cell.—*Fl. Cap.* ii. p. 473.

Herbaceous or half-shrubby, much-branched plants, with alternate or opposite, fleshy, quite entire leaves, and minute, axillary, mostly sessile flowers.—18 species, dispersed.

6. **PLINTHUS**, Fenzl.

Calyx tubular; limb 5-parted, lobes erect, subequal, coloured within. Petals 0. Stamens 5, inserted in the base of the calyx, alternate with the lobes, hypogynous; filaments exerted. Ovary 3-celled; ovules solitary, pendulous; style 3-parted. Capsules ovoid, densely papillose, not depressed, 3-celled, loculicidal, 3-valved; cells 1-seeded. Seeds shining, striate.—*Fl. Cap.* ii. p. 479.

*P. cryptocarpus*, Fenzl, found by Drege in the Nieuweveld, is a small, prostrate shrub. Leaves very minute, ovate-trigonal, opposite and alternate. Flowers hidden in the axils of the leaves, minute.

7. **ORYGIA**, Forsk.

Calyx 5-parted; segments cuspidate, of unequal length. Petals 15–30, spatulate-linear or oval, shorter than the calyx, at the base confluent into a fleshy cup. Stamens 12–40, in the bottom of the calyx, some free, some united at base; filaments subulate-triangular; anthers versatile, oblong. Ovary globose, 5-celled, many-ovuled; stigmas 5. Capsules dry, roundish, 5-angled, 5-furrowed, 5-celled, loculicidally 5-valved. Seeds many, on ascending cords, reniform, black, concentrically furrowed, arilled at the scar.—*Fl. Cap.* i. p. 136.

*O. decumbens*, the only species, is a glabrous, glaucous, diffuse plant, with angular stem and branches; fleshy, orbicular obovate or elliptical, entire or retuse, mucous or mucronate, alternate, petioled leaves, and cymose flowers. It grows in the Eastern and North-Eastern districts, and is also found in Arabia and the East Indies.

8. **MOLLUGO**, Linn.

Calyx 5-parted; segments ovate. Petals 0 or numerous, shorter than the calyx, very narrow, 2–3-forked or setaceous. Stamens 3–5–20, in the base of the calyx, hypogynous, free or united in parcels; filaments subulate; anthers oblong or globose. Ovary ovate, 3–5-celled, many-ovuled; stigmas 3–5, linear. Capsules membranous, 3–5-angled, loculicidally 3–5-celled. Seeds numerous, on ascending cords, reniform, smooth or tubercled.—Glinus, *Fl. Cap.* i. p. 136; and Mollugo, *Fl. Cap.* i. p. 137.

Annual or perennial, procumbent, glabrous or stellately-hairy plants, with alternate or whorled, entire or denticulate leaves, and small umbellate or clustered flowers.—3 Cape species, dispersed.

9. **PHARNACEUM**, Linn.

Calyx 5-parted; sepals very obtuse, coloured (white) within and at the margin. Petals 0. Stamens 3–5 or 12–16 in two rows, the 5 outer alternating with the sepals; or 20–30, in

3-5 parcels, connate at base, alternating with a few free stamens. Disk 3-5-fid or 0. Stigmas 3-5, obovate, fleshy, coloured or white, rarely terete. Capsules membranous, 3-5-angled, 3-5-celled, 3-5-valved, loculicidal; cells many-seeded. Seeds lenticular, smooth, shining.—Pharnaceum, *Fl. Cap.* i. p. 138; and *Hypertelis*, *Fl. Cap.* i. p. 144.

Small, slender, half-shrubby plants or herbs, with setaceous, filiform or linear, rarely lanceolate leaves; the cauline leaves alternate, the upper crowded in dense, brush-like tufts. Stipules conspicuous, either fimbriate or entire. Flowers in cymes or pseudo-umbels.—About 20 species, dispersed.

#### 10. **CÆLANTHUM**, E. Mey.

Calyx funnel-shaped or bell-shaped, semi-5-fid; the segments petaloid, obtuse. Petals 0. Stamens 5, inserted between the calyx-lobes, perigynous; filaments short; anthers sagittate, erect, longer than the filaments. Disk 0. Stigmas 3, roundish, fleshy. Capsules oblong, 3-angled, 3-celled, many-seeded, loculicidally 3-valved; valves septiferous. Seeds globose, subcompressed.—*Fl. Cap.* i. p. 147.

Glabrous annuals, with scape-like, 2-3-forked and racemoso-cymose stems, springing from a tuft of radical leaves. Leaves obovate oval or lanceolate. Stipules fimbriato-lacerate.—2 species, both Western.

#### 11. **PSAMMOTROPHA**, E. and Z.

Calyx 5-parted; sepals ovate, coloured within and at the margin. Petals 0. Stamens 5, alternate with the sepals; anthers globose. Disk 0. Style very short; stigmas 3-5, filiform. Capsule 3-5-angled, subglobose, 3-5-celled, 3-5-valved, loculicidal; cells 1-seeded. Seeds globose, granulated.—*Fl. Cap.* i. p. 146.

Small undershrubs or perennial herbs, with or without stipules. Branches bent at the nodes, with whorled leaves; sometimes very much branched, and imbricated with crowded, rigid, 4-ranked leaves. Flowers minute, umbellate.—4 species, dispersed.

#### 12. **ADENOGRAMMA**, Rchb.

Calyx 5-parted, ovoid or globose; sepals coloured within and at the margin. Petals 0. Stamens 5, alternate with the sepals, connate at base into a membranous, hypogynous ring; anthers ovoid, versatile. Ovary 1-celled, with a single ovule on an ascending cord; style simple; stigma capitate. Utricle indehiscent, conical, straight, compressed or lenticular, obliquely acuminate, smooth or papillated. Seed ovoid, with a membranous coat.—*Fl. Cap.* i. p. 149.

Slender, rigid perennials or annuals, dichotomous, diffuse and glabrous.

Leaves whorled, obovate, lanceolate or linear, with obsolete stipules. Flowers small, sessile or pedicellate, in sessile, axillary umbels.—7 species, dispersed.

### 13. POLPODA, Presl.

Calyx petaloid, 4-parted; sepals (snow-white) fringed and lacerate, imbricated at base with 3–4 hard-margined, basally-fimbriate bracts. Petals 0. Stamens 4, hypogynous, alternate with the sepals; filaments exerted; anther-cells linear, divaricate at base. Style 2-parted; branches filiform, erect, stigmatose. Capsules broadly obcordate, 2-celled, compressed laterally, loculicidally 2-valved; valves septiferous. Seed solitary, globose-reniform, granulated, black, opaque.—*Fl. Cap.* i. p. 149.

*P. Capensis*, the only species, is a diffusely-branched undershrub, the branches everywhere densely imbricated with minute, linear, hard-margined, channelled leaves, on each side at base bordered with membranous, fringed, stipulary laminæ. Flowers minute, axillary, sessile, forming long, cylindrical, terminal spikes.—Common on hills round Capetown and Kamp's Bay.

### 14. GIESEKIA, Linn.

Calyx 5-parted; sepals often coloured, with membranous edges. Petals 0. Stamens 5–15, hypogynous, separate, alternating singly or in parcels of 2 or 3 with the sepals; filaments broad-based, subulate. Carpels 5 (sometimes 3–4), sessile on a small torus, separate; ovules solitary, erect; styles 3–5, continuous with the inner angle of the carpel. Fruit lodged in the persistent calyx, of 3–5 1-seeded, warted or crested, dry nuts; embryo peripheric.—*Fl. Cap.* i. p. 155.

Small annuals or perennials, growing in sandy soil. Stems slender, spreading, forked. Leaves opposite or alternate, entire, fleshy, generally paler beneath, and dotted with hard, immersed points. Flowers minute, greenish, in simple or compound cymes.—2 Cape species, dispersed.

### 15. SEMONVILLEA, Gay.

Calyx 5-parted; sepals separate, herbaceous, with membranous edges. Petals 5 or 0, clawed. Stamens 5–7, hypogynous, the broad-based filaments slightly connate at base. Ovary compressed, of 2 plano-convex carpels, united by their flat sides; styles 2, filiform; stigmas subcapitate. Fruit orbicular, dry, formed of 2 separable, 1-seeded, indehiscent, plano-convex carpels, winged round the margin.—*Fl. Cap.* i. p. 152.

Slender, branching, glabrous annuals, found in North and South Africa.—*S. fenestrata*, Fenzl, the Cape species, grows on the Northern frontier. It is 12–18 inches high, much-branched, with very long narrow-linear leaves, and minute cymose flowers.

16. **LIMEUM**, Linn.

Calyx 5-parted; sepals connate at base, herbaceous, with membranous edges. Petals 3-5 or 0, clawed. Stamens 7 (rarely 5-8-10), hypogynous. Ovary subglobose, of 2 hemispherical carpels, united by their flat sides; styles 2, slender. Fruit of 2 separable, 1-seeded, indehiscent, hemispherical, wingless, dorsally-pitted, or echinate carpels.—*Fl. Cap.* i. p. 152.

Small, herbaceous or woody, prostrate or erect perennials or annuals. Leaves simple, entire, alternate, slightly fleshy, often glaucous and glabrous, sometimes glandularly hairy. Inflorescence cymoid. Flowers small, white or greenish-white.—8 species, dispersed.

17. **TRIANTHEMA**, Lam.

Calyx 5-parted; sepals coloured within, mucronate below the apex. Petals 0. Stamens 5-10 to 40 or 70, on the tube of the calyx. Ovary 2-celled or 1-celled by abortion; stigmas 2, filiform. Capsule opening by a transverse slit at or below the middle (*circumscissile*). Seeds few or many in each cell, sometimes solitary.—*Diplochonium*, *Fenzl*; *Fl. Cap.* ii. p. 473; and *Trianthema*, *Fl. Cap.* ii. p. 598.

Fleshy herbs, with opposite, entire leaves, and axillary, sessile, solitary or clustered flowers.—3 Cape species, on the North-Western frontier.

ORDER LXIII. **UMBELLIFERÆ**.

Flowers usually bisexual, small. Calyx adhering to the ovary; limb 5-toothed or obsolete. Petals 5, on the outside of a fleshy epigynous disk. Stamens 5, alternate with the petals and inserted with them. Ovary inferior, of 2 carpels, 2-celled; ovules solitary, pendulous; styles 2, divergent. Fruit dry, of 2 easily separable carpels (*mericarps*), which cohere by their inner face (*commissure*), and are attached to a central slender axis (*carpopphore*), but at maturity often separate from it, and are for a time pendulous from its summit. Each carpel (*mericarp*) is indehiscent, having 5 longitudinal (primary) ribs, and often also 4 (secondary) intermediate ribs, the ribs being separated by furrows. In the substance of the pericarp are linear, longitudinal oil-vessels (*vittæ*), which sometimes are opposite the furrows, sometimes the ribs. Albumen copious, horny. Embryo minute.—Mostly herbs, rarely shrubs. Leaves alternate, with sheathing petioles, mostly cut or lobed.—(*Several terms often used in describing plants of this Order are given above, within brackets, immediately after the explanation of each. The characters which distinguish the genera are mostly*



*taken from the fruit, and are often so minute as to require very close inspection by the student.)*

Suborder 1. **Orthospermeæ.** Albumen (as seen in a cross-section of the ripe fruit) flat or not grooved on its inner face.

\* *Umbels simple or imperfect, or flowers capitate.*

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|--|-----------------|
| 1. HYDROCOTYLEÆ. Fruit laterally compressed          | 1. HYDROCOTYLE. |
| 2. SANICULEÆ. Fruit ovato-globose; section circular. |                 |
| Fruit covered with hooked bristles . . .             | 2. SANICULA.    |
| Fruit tuberculated . . . . .                         | 3. ALEPIDEA.    |

\*\* *Umbels compound or perfect.*

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|--|---------------------|
| 3. AMMINEÆ. Fruit laterally compressed or didymous.  |                     |
| Carpels equal; leaves much cut or divided.   |                     |
| Carpophore distinct, entire, not 2-parted.   |                     |
| Fruit roundish, didymous. Petals roundish . . . . .  | 4. APIUM.           |
| Fruit ovate or oblong. Petals ovate . . . . .  | 6. HELOSCIADIUM.    |
| Carpophore 2-parted.   |                     |
| Furrows of fruit each with 1 vitta.  |                     |
| Margin of calyx obsolete.  |                     |
| Petals roundish, entire . . . . .  | 5. PETROSELINUM.    |
| Petals obcordate . . . . .   | 6. CARUM.           |
| Margin of calyx 5-toothed.   |                     |
| Petals deeply emarginate, white . . . . .  | 7. PTYCHOTIS.       |
| Petals obovate, entire, yellowish . . . . .  | 11. RHYTICARPUS.    |
| Furrows of fruit each with many vittæ.   |                     |
| Fruit ovate. No involucre or involucl . . . . .  | 9. PIMPINELLA.      |
| Fruit subdidymous. Involucre and involucl present . . . . .  | 10. SIUM.           |
| Carpels equal. Leaves quite entire, undivided . . . . .  | 12. BUPLEURUM.      |
| Carpels unequal. Leaves entire, 3-lobed or 3-parted . . . . .  | 13. HETEROMORPHA.   |
| 4. SESELINEÆ. Cross-section of the fruit circular or nearly so, or the carpels slightly compressed at back (commissure broad). |                     |
| Vittæ under the ribs of the fruit; none in the furrows . . . . .   | 14. LICHTENSTEINIA. |
| Vittæ under the furrows of the fruit.  |                     |
| Carpels unequal . . . . .  | 15. ANESORHIZA.     |
| Carpels equal, hispid or scaly . . . . .   | 19. DEVERRA.        |
| Carpels equal, glabrous.   |                     |
| Calyx-margin enlarged in fruit, 5-fid.   |                     |
| Carpophore indistinct . . . . .  | 16. CENANTHE.       |
| Calyx-margin unchanged. Carpophore distinct and free.  |                     |
| Ribs of fruit obtuse, filiform, lateral wider. Flowers white . . . . .   | 21. POLEMANNIA.     |

- Ribs prominent, bluntly keeled, the  
     lateral wider. Flowers yellow . . 18. **FÆNICULUM**.  
 Ribs prominent, filiform, equal . . 20. **SESEL**.  
 Ribs sharp, wing-like, equal . . . 17. **GLIA**.  
 Ribs thick, rounded, corky, wing-like 22. **STENOSEMIS**.  
 Ribs membranaceous, wing-like . . 23. **CNIDIUM**.
5. **ANGELICEÆ**. Fruit much compressed dorsally,  
     having a double wing on each side . . 24. **LEVISTICUM**.
6. **PEUCEDANEÆ**. Fruit much compressed dor-  
     sally, with a single sharp or thickened  
     wing on each side.  
     Fruit with 5 dorsal ribs, and vittæ in the  
     furrows.  
     Dorsal ribs slender, filiform.  
     5 ribs, equidistant, and equally filiform.  
     Margin of fruit broad. Petals emar-  
     ginate . . . . . 25. **PEUCEDANUM**.  
     Margin of fruit narrow. Petals en-  
     tire . . . . . 26. **BUBON**.  
     5 ribs, equidistant, the three medial  
     sharply keeled . . . . . 27. **ANETHUM**.  
     3 ribs, equidistant, 2 lateral distant, mar-  
     ginal . . . . . 28. **PASTINACA**.  
     Dorsal ribs thick, keeled tubercled or  
     flexuous . . . . . 29. **CAPNOPHYLLUM**.  
     Fruit without dorsal ribs, hairy; margin  
     thick. No vittæ . . . . . 30. **PAPPEA**.
7. **DAUCINEÆ**. Fruit somewhat compressed dor-  
     sally. Carpels with 5 primary, bristly,  
     and 4 secondary, prickly ridges . . . 31. **DAUCUS**.

Suborder 2. **Campylospermeæ**. Albumen with a longitudinal furrow  
 along its inner face (a cross-section of fruit showing it concave on the side  
 next the commissure).

8. **CAUCALINEÆ**. Fruit laterally compressed or  
     subterete; lateral primary ridges on the  
     commissure, the dorsal bristly or setose . 32. **TORILIS**.
9. **SMYRNEÆ**. Fruit turgid, often laterally com-  
     pressed; ribs sometimes obliterated.  
     Dioecious. Fruit adnate to a large, spinous  
     involucre . . . . . 33. **ARCTOPUS**.  
     Fruit not involucrate.  
     Fruit subcompressed dorsally; dorsal ribs  
     wing-like; lateral very small; furrows  
     multivittate . . . . . 34. **HERMAS**.  
     Fruit ovate, compressed laterally; ribs 5,  
     equal, undulate-crenate; furrows with-  
     out vittæ . . . . . 35. **CONIUM**.

## 1. **HYDROCOTYLE**, Tourn.

Calyx-margin obsolete. Petals ovate, entire, acute, with a  
 straight point. Fruit laterally compressed, flattened; carpels

without vittæ, their 5 ribs nearly filiform, the dorsal and lateral usually obsolete, the intermediate confluent.—*Fl. Cap.* ii. p. 526.

Small herbs or half-shrubby plants. Umbel simple, commonly 3-flowered, 2 of the flowers sterile; flowers sessile or pedicelled, white. Involucre in flower 4-leaved.—17 Cape species, dispersed.

## 2. SANICULA, Linn.

Calyx-tube bristly, its margin 5-cleft, leafy. Petals erect, conniving, obovate, with inflexed tips. Fruit subglobose, not spontaneously separating; carpels with obsolete ridges, and many vittæ, covered with hooked bristles; carpophore indistinct.—*Fl. Cap.* ii. p. 533.

Perennials. *S. Europæa*, Linn., a common wood-plant in the Northern hemisphere, occurs in woods in many places. Leaves radical, palmate-parted, the lobes 3-fid, sharply toothed; flowers sessile, in umbellules, white or reddish.

## 3. ALEPIDEA, La Roche.

Calyx-tube glabrous or roughly tubercled; lobes erect, leafy. Petals inflexed. Fruit ovate, somewhat laterally compressed, the cross-section nearly circular; carpels without vittæ, having 5 filiform or raised inflated ribs; carpophore at length free, simple.—*Fl. Cap.* ii. p. 534.

Glabrous herbs, natives of the Cape.—2 species, both Eastern. Leaves chiefly radical, oblong, ciliate-toothed with spinous bristles. Partial umbels with many-leaved involuclers.

## 4. APIUM, Linn.

Calyx-margin obsolete. Petals roundish, entire. Stylopod depressed. Fruit roundish, laterally compressed, didymous; carpels with equal, filiform ridges, the lateral marginal; furrows 1- or the outer 2-3-vittate; carpophore undivided. Seeds gibbous, convex, flattish in front.

*A. graveolens*, Linn. (Wild Celery), occurs in the Eastern districts. Stem furrowed, decumbent; leaves pinnate, the upper ternate, leaflets cuneate, cut and toothed; petals with the point closely involute.

## 5. PETROSELINUM, Hoffm.

Calyx-margin obsolete. Petals roundish, entire, scarcely emarginate, with a narrow incurved point. Stylopod short, conical, subcrenulate. Fruit ovate, laterally compressed, didymous; carpels with 5 filiform, equal ridges, the lateral marginal; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted. Seeds gibbous, convex, flattish in front.—*Fl. Cap.* ii. p. 535.

*P. sativum* (Parsley) is naturalized from Europe. Leaves decompose, shining; leaflets much cut. Flowers white or greenish. Involucres few-leaved; involucler of many filiform leaves.

### 6. HELOSCIADIUM, Koch.

Calyx-margin 5-toothed or obsolete. Petals ovate, entire, with a straight or incurved point. Fruit ovate or oblong, laterally compressed; carpels with 5 filiform, prominent, equal ridges, the lateral marginal; furrows 1-vittate; carpophore distinct, entire. Seeds convex, flattish in front.—*Fl. Cap.* ii. p. 535.

Stems prostrate or erect; leaves pinnate or ternate, glabrous or hairy.—2 species, dispersed.

### 7. PTYCHOTIS, Koch.

Calyx-margin 5-toothed. Petals obovate, 2-fid, or deeply emarginate, with a long, inflexed point. Fruit compressed, ovate or oblong; carpels with 5 equal, filiform, primary ridges, the lateral ones marginal; furrows with single vittæ; carpophore 2-parted. Seeds convex, flattish in front.—*Fl. Cap.* ii. p. 536.

Annual or biennial. Cauline leaves much cut into slender segments. Umbels axillary; involucler many-leaved, involucre present or absent; flowers white; fruit smooth or mucronate.—5 Cape species, dispersed.

### 8. CARUM, Linn.

Calyx-margin obsolete or nearly so. Petals obovate or elliptic, emarginate, with an inflexed point. Stylopod depressed or shortly conical. Fruit ovate or oblong, laterally compressed; carpels with 5 filiform, equal ribs, the lateral marginal; furrows 1-vittate; commissure 2-vittate; carpophore free, forked or 2-parted. Seeds convex, flattish in fruit.—*Fl. Cap.* ii. p. 538.

*C. Capense*, Sond., our only species, has a fleshy aromatic root (*Fenkel-wortel*), a branching stem; 3-pinnate, capillary-multifid radical leaves, and sheath-like abortive cauline leaves. Flowers white.—Eastern and Western districts.

### 9. PIMPINELLA, Linn.

Calyx-margin obsolete. Petals obovate, emarginate, with a long inflexed point. Fruit laterally compressed, ovate, crowned with the reflexed styles, whose bases are much swollen, smooth or hairy; carpels with 5 filiform, equal ridges, the lateral marginal; furrows with many vittæ; commissure 2-vittate; carpophore free, 2-fid.—*Fl. Cap.* ii. p. 538.

Herbs with 2-pinnatifid or cordate radical leaves and pinnatifid cauline leaves. Neither involucre nor involucler. Flowers white or yellow.—2 Cape species, both Eastern.

10. **SIUM**, Linn.

Calyx-margin 5-toothed or obsolete. Petals obcordate, with an inflexed point. Stylopod depressed or shortly conical. Fruit laterally compressed, subdidymous; carpels with 5 filiform, equal, obtuse ridges; furrows and commissure both with many vittæ; carpophore 2-parted. Seed subterete.—*Fl. Cap.* ii. p. 539.

Mostly aquatic or marsh plants.—*S. Thunbergii*, DC., our only species, has pinnate leaves, the leaflets ovate, acute, serrate, and stalked lateral or terminal umbels; involucre and involucels many-leaved. Flowers white. Found in Western and Eastern districts and at Natal.

11. **RHYTICARPUS**, Sond.

Calyx-margin 5-toothed. Petals obovate, entire, involute, apex acute or acuminate. Fruit roundish, laterally compressed, crowned with the conical stylopod and short styles; carpels rugose, with 5 filiform ridges, the lateral marginal; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted. Seeds convex.—*Fl. Cap.* ii. p. 540.

Glabrous perennials. Stem erect, glaucous; petioles 3-parted; leaves pinnatisect, lobes cuneate or subulate. Flowers yellow. Involucre and involucels many-leaved.—2 species.

12. **BUPLEURUM**, Linn.

Calyx-margin obsolete. Petals roundish, entire, with an involute, broad, obtuse point. Fruit laterally compressed or somewhat didymous, crowned with the depressed stylopod; carpels with 5 acute, winged, filiform or obsolete ridges, the lateral marginal; furrows with or without vittæ, smooth or granulate.—*Fl. Cap.* ii. p. 541.

Herbaceous or shrubby glabrous plants. Leaves usually quite entire.—2 Cape species: *B. Mundtii*, a herb with linear-subulate, nerved leaves; and *B. difforme*, a shrub with filiform, rush-like leaves. The former is Eastern, the latter dispersed.

13. **HETEROMORPHA**, Ch. and Schl.

Calyx-margin 5-toothed. Petals roundish, entire, involute, the apex broad, retuse. Fruit obovate-pyriform, 3-winged; carpels unequal, of two forms, the outer one 2-winged, the inner one 3-winged, wings decurrent from the calyx-teeth; furrows 1-vittate; commissure 2-vittate.—*Fl. Cap.* ii. p. 542.

*H. arborescens* is a glabrous shrub, very variable in foliage. Leaves petioled, ovate or oblong, either quite entire, or 3-lobed, 3-parted or 3-foliate. Umbels many-rayed. Involucels many-leaved. Flowers yellow.—Eastern district and Natal.



14. **LICHTENSTEINIA**, Ch. and Schl.

Calyx-margin 5-toothed. Petals elliptic, with a very long, inflexed point. Fruit nearly terete, crowned with the erect calycine teeth, surmounted by the short, spreading styles and conical stylopods; carpels smooth, 5-ridged, the ridges filiform, equal, the lateral marginal; vittæ large, one under each ridge, but none in the commissure or furrows; carpophore 2-parted.—*Fl. Cap.* ii. p. 542.

Aromatic perennials. Radical leaves variously cut, simple or 3-parted, pinnate or 2-pinnate; cauline with imperfect laminae. Involucre many-leaved. Flowers white.—6 species, dispersed.

15. **ANESORHIZA**, Ch. and Schl.

Calyx-margin 5-toothed. Petals elliptical, acuminate, more or less emarginate, with an inflexed point. Fruit 5-angled, prismatic, crowned by the calyx and inflexed styles; carpels convex at back, unequal, one of them 3-winged, the other 4-winged; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 544.

Biennials or perennials, with aromatic roots; *Anyswartel* of colonists. Radical leaves petioled, pinnate-parted, cauline small and scale-like. Umbels many-rayed; involucres many-leaved. Flowers white.—7 species, dispersed.

16. **CENANTHE**, Linn.

Calyx-margin 5-toothed, enlarged in fruit. Petals obovate, emarginate, with inflexed points. Stylopod conical. Fruit cylindrical-ovate, crowned with the long erect styles; carpels with 5 obtuse, rather convex ridges, the lateral marginal and broader; furrows 1-vittate; carpophore indistinct.—*Fl. Cap.* ii. p. 547.

Smooth herbs, often aquatic.—*O. filiformis*, our only species, grows in dry places in the Western districts. It is an annual, with simple, filiform linear or linear-lanceolate leaves. Involucre and involucels of 3–5 subulate leaves. Flowers white.

17. **GLIA**, Sond.

Calyx-margin 5-toothed; teeth triangular, acute, persistent, not enlarged in fruit. Petals obovate, subemarginate, with an inflexed, lanceolate point. Fruit ovate-oblong, subterete, crowned with the conical stylopod and spreading styles; carpels with 5 equal, sharp, nearly wing-like ridges, the lateral marginal; furrows with single vittæ; commissure 2-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 547.

*G. gummifera*, Sond., the only species, grows in many places in the Western districts; it is the *gli* of the Hottentots, who prepare from its roots

an inebriating drink. Leaves pinnate-parted, the lower with broader, the upper with narrower segments. Involucres many-leaved.

### 18. FŒNICULUM, Adans.

Calyx-margin tumid, obsolete. Petals roundish, entire, involute, with a retuse point. Fruit in a cross-section nearly circular; carpels with 5 prominent, bluntly keeled ribs, the lateral marginal and a little broader; furrows 1-vittate; commissure 2-vittate. Seed semicylindrical.—*Fl. Cap.* ii. p. 548.

*F. officinale* (Fennel) is naturalized in various places. Leaves all 3-pinnate, with capillary, elongated leaflets.

### 19. DEVERRA, DC.

Calyx-margin obsolete. Petals ovate, acuminate, with inflexed points. Styles short, at length spreading. Fruit ovate or roundish, laterally subcompressed, covered with granules or hairs; carpels semiterete, often with obsolete ridges; 1 oil-vessel in the furrow, and 2 in the commissure; carpophore 2-parted.—*Fl. Cap.* ii. p. 548.

Aromatic, nearly leafless, glaucous, rigid, broom-like herbs. Involucre 4-6-leaved, deciduous. Flowers white.—2 species, both Eastern; *D. aphylla* with hairy, and *D. Burchellii* with tuberculated fruit.

### 20. SESELI, Linn.

Calyx-margin 5-toothed, the teeth short, thick, sometimes obsolete. Petals ovate, with inflexed points, emarginate or nearly entire. Fruit oval or oblong, its cross-section nearly circular, crowned by the reflexed styles; carpels with 5 prominent, filiform or elongated, thick ridges, the lateral marginal and often a little broader; furrows 1-vittate, the outer rarely 2-vittate; commissure 2-vittate, rarely 4-vittate. Seed semiterete.—*Fl. Cap.* ii. p. 549.

Biennials or perennials, with 3-foliolate pinnate or decompound leaves. Involucre obsolete; involucre many-leaved. Flowers white, rarely yellow.—3 species, of which 2 are Eastern.

### 21. POLEMANNIA, E. and Z.

Calyx-margin shortly 5-toothed. Petals elliptical, entire, with an acuminate, inflexed point. Fruit oblong, its cross-section nearly circular, crowned with the depressed-conical stylopod and short styles; carpels with 5 prominent, blunt ridges, the lateral marginal a little larger; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 550.

Glabrous shrubs with petioled, 3-foliolate leaves, the leaflets wedge-

shaped, 3-fid or undivided. Umbels many-rayed; flowers white.—2 species, dispersed.

## 22. STENOSEMIS, E. M.

Calyx-margin minutely 5-toothed. Petals obovate, deeply emarginate, with subulate, inflexed points. Fruit roundish-ovate, its cross-section circular; carpels with 5 large, rather winged ribs, the 3 dorsal roundish-obtuse, corky, the lateral marginal, a little more dilated and sharp-edged; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 551.

Glabrous perennials, with erect, furrowed stem and branches, and petioled, 3-foliolately-pinnate leaves; leaflets filiform or linear. Involucre of many lanceolate leaves.—2 species, both Eastern.

## 23. CNIDIUM, Cuss.

Calyx-margin obsolete or with very short teeth. Petals obovate or ovate, emarginate, with inflexed points. Cross-section of the fruit subcircular; carpels with 5, equal, winged ridges, the lateral marginal; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted. Seed semicylindrical, flat in front.—*Fl. Cap.* ii. p. 552.

Decumbent or erect plants.—2 Cape species, very unlike each other; *C. suffruticosum*, decumbent, with 3-pinnatisect, rigid leaves; and *C. Kraussianum*, erect, with reniform-cordate lower and 3-fid upper leaves.

## 24. LEVISTICUM, Koch.

Calyx-margin obsolete or with short teeth. Petals incurved, entire, with an acute point. Fruit compressed from the back, having 2 wings on each side; carpels with 5 winged ribs, the wings of the lateral ribs usually twice the breadth of the others; furrows 1-vittate; commissure 2-4-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 553.

Strong growing, glabrous herbs, with pinnate-parted leaves; leaflets obovate, entire. Flowers yellow or yellowish.—*L. grandiflorum*, Sond., the only Cape species, is found in the Western districts.

## 25. PEUCEDANUM, Koch.

Calyx-margin 5-toothed or obsolete. Petals obovate, emarginate or subentire, with inflexed points. Fruit dorsally compressed, flat or lenticular, with a dilated, flattened margin; carpels with subequidistant ribs, the 3 intermediate or dorsal filiform, the 2 lateral lost in the dilated margin; furrows 1-vittate, or the lateral 2-vittate; commissure 2-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 553.

Glabrous perennials or shrubs. Leaves either pinnate, ternately-cut, or

multifid. Involucre many-leaved. Flowers white or yellow.—17 Cape species, dispersed.

## 26. BUBON, Linn.

Calyx-margin obsolete. Petals obovate, entire, with an acute, involute point. Fruit dorsally compressed, lenticular, with a narrow, flattened margin; carpels with 5 equidistant ribs, the 3 intermediate filiform, the 2 lateral lost in the flattened margin; furrows 1-vittate; commissure 2-vittate; carpophore 2-parted.—*Fl. Cap.* ii. p. 561.

Glabrous and resiniferous shrubs. Leaves ternately compound; leaflets veiny. Umbels many-rayed; involucre and involucels of many linear leaves. Flowers greenish-yellow.—5 species, dispersed.

## 27. ANETHUM, Linn.

Calyx-margin obsolete. Petals roundish, entire, involute, with a retuse point. Fruit dorsally compressed, lenticular, with a flattened margin; carpels with filiform, equidistant ridges, the 3 dorsal sharply keeled, the 2 lateral subobsolete, confounded with the margin; furrow filled up with a broad vitta, 2 in the commissure.—*Fl. Cap.* ii. p. 561.

*A. graveolens*, Linn. ("Dill"), is naturalized in old gardens. It is grown for its pungently aromatic seeds. Annual, glabrous, with decomposed leaves and yellow flower; no involucre.

## 28. PASTINACA, Linn.

Calyx-margin obsolete or minutely-toothed. Petals roundish, entire, involute, the apex broad and retuse. Fruit dorsally flattened, with a dilated, flat margin; carpels with very slender ridges, the dorsal and 2 intermediate equidistant, the lateral near the outer edge of the dilated margin; furrows 1-vittate; commissure 2- or more-vittate; carpophore 2-parted. Seed flat.—*Fl. Cap.* ii. p. 561.

Herbs, with a fusiform, often fleshy root (Parsnip).—*P. Capensis*, Sd., our only species, has pinnate leaves, pubescent beneath, the lateral leaflets subsessile, entire or 2-fid, terminal 3-lobed; lobes toothed. Flowers yellow.

## 29. CAPNOPHYLLUM, Gærtn.

Calyx-margin obsolete. Petals oblong, subemarginate, with a sharp, inflexed point. Fruit dorsally compressed, lenticular, with a flat, dilated margin; carpels with the 3 dorsal ridges thick, keeled, flexuous or tubercled, the 2 lateral passing into the dilated margin; furrows 1-vittate; commissure 2-vittate.—*Fl. Cap.* ii. p. 562.

*C. Africanum*, our only species, is a glabrous, glaucous annual, growing in sandy ground near the sea in the Western districts. Leaves 2-3-pinnate; segments capillary-multifid. Umbels many-ranged. Flowers white.

### 30. PAPPEA,\* Sond. and Harv.

Flowers hermaphrodite, regular. Calyx-margin obsolete. Petals ovate, dorsally 2-convex, keeled inside, with a sharp, incurved point. Fruit dorsally compressed, lenticular, pilose; carpels covered with hairs; ribs none, except the marginal, which form a broad margin, fringed with vesicles; commissure completely joined at the margin; carpophore 2-parted.—*Fl. Cap. ii. p. 562.*

*P. Capensis*, Sond. and Harv., the only species, is a glaucous and, except on the fruit, a glabrous, many-stemmed annual, of small size, but curious structure. Leaves cut into many capillary segments. Umbels sessile at the base of the stem or the origin of the branches. Flowers white.—Found by Zeyher near the foot of the Witberg.

### 31. DAUCUS, Linn.

Calyx-margin 5-toothed. Petals obcordate, with an inflexed lobe, the outer ones often larger and 2-fid. Fruit dorsally compressed; carpels with bristly primary ridges; secondary ridges equal-winged, with a row of spines; furrows with single vittæ under the secondary ridges.—*Fl. Cap. ii. p. 563.*

Biennials.—*D. Carota*, Linn., (the Wild Carrot,) is occasionally found near cultivation. A hairy plant, with 2-3-pinnate leaves and deeply-cut leaflets. Umbels of many rays, with a solitary, central, abortive flower.

## SUBORDER 2. Campylospermeæ.

### 32. TORILIS, Spreng.

Calyx-teeth 5, triangular-lanceolate, acute. Petals obovate, emarginate, with an inflexed point, the outer larger, 2-fid. Fruit laterally compressed; carpels with 5 primary, bristly ridges, 3 dorsal and 2 lateral; the secondary ridges represented by rows of hook-pointed bristles, filling the furrows; vittæ solitary, under the secondary bristles; carpophore setaceous, 2-fid. Seed with its margins inflexed.—*Fl. Cap. ii. p. 564.*

Annuals, with multifid leaves, closely pubescent. Umbels opposite the leaves. Flowers white.—*T. Africana*, our only species, is common in cultivated ground.

### 33. ARCTOPUS, Linn.

Flowers polygamo-diœcious. Calyx-margin 5-toothed. Petals lanceolate, with an incurved, sharp point.—Male: Stamens twice as long as the corolla. Ovary abortive.—Female: Stamens 0. Styles divaricating, on thick bases. Fruit ovate, acute or rostrate, crowned with the calyx, its lower half attached to the involucre, marked with a furrow, not separable

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\* *Pappea*, Eckl. and Zey., being restored in Hooker and Bentham's 'Genera Plantarum,' this genus is there renamed *Choritania*, Benth.



into 2 parts but 2-locular, with 1 cell abortive. Seed 1, roundish, convex on one side, furrowed on the other.—*Fl. Cap.* ii. p. 564.

Perennial, stemless plants, with rosulate, ciliate leaves, close-pressed to the ground. Male umbels compound, pedunculate, sterile; umbellules nearly globose; involucre of 5-7 leaves. Female umbels sessile, fertile, girt by 4 or 5 concrete involucre leaves; these are rigid, netted-veined and spinous-toothed, enlarging as the fruit ripens. Petals white.—3 species, dispersed.

### 34. HERMAS, Linn.

Calyx-margin 5-parted, leafy, persistent. Petals oval-oblong, acute, keeled, entire, equal. Fruit ovate; carpels somewhat inflated, dorsally compressed, 5-ridged, 1 dorsal exserted, 2 intermediate larger, and the 2 lateral very small; furrows broad, with many vittæ; carpophore undivided. Seed not adnate to the pericarp, elliptic, subconcave within.—*Fl. Cap.* ii. p. 567; *Hook. Ic. Plant. t.* 1001.

Herbs or undershrubs, with simple, subdentate leaves, and compound, many-rayed, globose umbels. Involucre many-leaved: involucre 3-leaved. Leaves thickly-woolly on one or both sides. The wool of *H. gigantea* (Tundelboom) is used for tinder.—5 species, dispersed.

### 35. CONIUM, Linn.

Calyx-margin obsolete. Petals obcordate, submarginate, with a short, inflexed point. Fruit ovate, laterally compressed; carpels with 5 prominent, equal, subundulate or crenulate ribs; lateral ones marginal; furrows with many striæ, but without vittæ; carpophore 2-fid at the apex. Seed with a deep, narrow furrow, as if it were longitudinally folded.—*Fl. Cap.* ii. p. 567.

*C. chærophylloides*, E. and Z., our only species, grows in the Eastern district and beyond the Eastern frontier. Stem scabrid; leaves 3-4-pinnate, glabrous; fruit with very prominent, subundulate, but not crenulate wings.—The type of this genus is the well-known poison Hemlock (*C. maculatum*), a common European weed.

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## ORDER LXIV. ARALIACEÆ.

Flowers nearly as in *Umbelliferae*. Ovary inferior, with 2 or more cells; ovules solitary, pendulous; styles or sessile stigmas as many as the cells of the ovary. Fruit fleshy, or nearly dry, 2-many-celled, crowned by the persistent calyx-limb; endocarp crustaceous or bony. Albumen copious, horny. Embryo minute.—Trees or shrubs, rarely herbs, chiefly tropical. Leaves alternate, simple or compound, digitate, pedate or pinnate.

Fruit roundish, top-shaped, crowned with a large disk . . . 1. CUSSONIA.  
Fruit laterally compressed, oblong . . . . . 2. PANAX.

### 1. CUSSONIA, Th.

Calyx-margin 5-7-toothed or entire. Petals 5-7. Stamens as many as the petals, alternate with them. Ovary top-shaped, crowned by a broad disk; styles 2-3, short, erect, distinct, near together. Fruit 2-3-celled, roundish, somewhat fleshy.—*Fl. Cap.* ii. p. 568.

Shrubs or small trees, with thick, somewhat fleshy stems. Leaves on long petioles, glabrous, glossy, sometimes glaucous, palmate or digitate, with 5-9 1-nerved, entire or lobed leaflets. Flowers in spikes, panicles, racemes or umbels.—6 species, dispersed.

### 2. PANAX, Linn.

Flowers polygamous. Calyx-margin obsoletely 5-toothed. Petals 5. Stamens 5. Ovary inferior, 2-celled; styles 2, divergent; stigmas simple. Berry laterally compressed, oblong or orbicular (or didymous, rarely terete-obconic), 2-celled; cells 1-seeded.

A large and widely-distributed genus of trees, shrubs or herbs, various in habit.—*P. Gerrardi*, Harv. MSS., lately found by Mr. Gerrard (No. 1264) at Ingoma, Natal, is a low tree, glabrous in all parts, with simple, palmately 3-5-lobed leaves, the lobes acuminate, glandularly serrulate; peduncles axillary, bearing a terminal, simple, many-rayed umbel, and several lateral similar umbels, which seem to be frequently abortive; fruit oblong, much compressed.

## ORDER LXV. CORNEÆ.

Flowers small, regular. Calyx-tube adnate to the ovary; limb 4-toothed. Petals 4, epigynous, with valvate æstivation. Stamens 4, alternate with the petals, inserted round the margin of a fleshy disk. Ovary inferior, 2-4-celled; ovules solitary, pendulous, anatropal; style single. Fruit fleshy, with a bony 2-4-celled nucleus. Embryo in the axis of fleshy albumen.—Trees or shrubs, with opposite, exstipulate, penninerved leaves. Flowers in heads, umbels, cymes or panicles.

### 1. CURTISIA, Ait.

Calyx-tube top-shaped, 4-angled; limb 4-parted. Petals 4, ovate, valvate. Stamens 4; filaments subulate; anthers versatile, short, didymous. Ovary 4-celled (occasionally 3-celled), crowned with a hairy disk; style single; stigmas 3-4. Fruit thinly-fleshy, with a bony, 4-celled (or 2-3-celled) nut. Seeds 1 in each cell, pendulous.—*Fl. Cap.* ii. p. 570; *Thes. Cap.* t. 124.

*C. faginea*, Ait. (Hassagay wood), is a fine tree, found in forests throughout the colony. Leaves oblong-ovate, acute, rigid, coarsely-toothed, penni-

nerved, glabrous and glossy above, tomentose beneath. Twigs and inflorescence rusty-tomentose. Panicles terminal, much-branched; flowers minute, hairy.

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## ORDER LXVI. LORANTHACEÆ.

Flowers bisexual or unisexual, regular. Calyx bracted at base, adnate; limb short, often obsolete. Petals 4–8, separate or more or less cohering, valvate in bud. Stamens as many as the petals and opposite them; filaments adhering to the base or claw of the petal; anthers 2- or many-celled. Ovary inferior, 1-celled, with a solitary erect ovule adnate to the walls of the ovary; style filiform or 0; stigma capitate. Fruit a succulent, 1-seeded berry. Embryo in fleshy albumen.—Shrubby parasites, chiefly found in hot countries. Leaves quite entire, opposite or alternate, coriaceous or fleshy, without stipules. Flowers variously disposed, minute or very showy.

Flowers bisexual. Petals linear or clawed, partly united in a tubular corolla. Style filiform . . . . . 1. LORANTHUS.  
Flowers unisexual, minute. Petals sessile, free or connate at base. Style 0 or very short . . . . . 2. VISCUM.

### 1. LORANTHUS, Linn.

Flowers bisexual. Calyx-limb short, truncate or toothed. Petals 4–8, with slender claws, more or less united in a tubular corolla. Stamens inserted on the claws of the petals; filaments subulate; anthers 2-celled. Style filiform; stigma capitate. Berry usually crowned by the limb of the calyx.—*Fl. Cap.* ii. p. 574; *Thes. Cap.* t. 30.

A large, chiefly tropical genus. Flowers usually brightly-coloured, yellow orange or scarlet, rarely white.—12 (or perhaps more) Cape species, all natives, either of the Eastern district or of Natal.

### 2. VISCUM, Linn.

Flowers unisexual. Calyx-limb obsolete. Petals 3–4, short, triangular or ovate.—Male: Anthers sessile on the face of the petals, opening inwards by several pores.—Female: Stamens 0. Style very short or 0; stigmas capitate. Berry viscid, 1-seeded.—*Fl. Cap.* ii. p. 578.

Parasitic shrubs, natives of the warmer parts of the Old World. Stems forked, often jointed. Leaves opposite or 0. Flowers minute, greenish, axillary, tufted, or solitary.—11 Cape species, dispersed, but the majority Eastern.

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## ORDER LXVII. RUBIACEÆ.

Flowers regular, mostly bisexual. Calyx-tube adnate; limb 4–6-lobed or toothed. Corolla monopetalous, epigynous, 4–6-

lobed. Stamens inserted on the corolla, as many as its lobes, and alternate with them. Ovary inferior, 2- or more-celled; ovules 1 or many in each cell; style filiform, often 2-fid (rarely 2-parted to the base); stigma mostly thickened; long and hairy in *Anthospermeæ*. Fruit various. Seeds with copious albumen. —Leaves opposite, quite entire, with interpetiolar stipules. Habit much diversified.

\* *Cells of the fruit many-seeded.*

Tribe 1. GARDENIÆ. Fruit fleshy or dry, indehiscent. (Shrubs or trees.)

- |   |                 |
|---|-----------------|
| Corolla somewhat funnel-shaped, with a very short limb; anthers within the tube . . . . .   | 1. BURCHELLIA.  |
| Corolla salver-shaped, with a very long, slender tube, and much acuminate, spreading segments; stamens exserted . . . . .                               | 2. OXYANTHUS.   |
| Corolla salver-shaped; stamens exserted; stigma club-shaped, simple; berry dry; flowers corymbose . . . . .   | 3. STYLOCORYNE. |
| Corolla salver- or funnel-shaped; anthers exserted; stigma 2-dentate; berry fleshy; flowers solitary . . . . .  | 4. GARDENIA.    |
| Corolla funnel-shaped, with a very short tube; anthers sessile within the tube; stigmas 2; berry nearly dry; flowers axillary, sessile, small . . . . . | 5. RANDIA.      |

Tribe 2. HEDYOTIDÆ. Fruit a dehiscent, 2-celled capsule.

Small herbaceous plants; corolla salver-shaped . . . . . 6. HEDYOTIS.

\*\* *Cells of the fruit 1-seeded, rarely 2-seeded.*

Tribe 3. GUETTARDEÆ. Fruit a 2-10-celled drupe. Seeds not furrowed in front.—Shrubs or trees.

- |  |                 |
|--|-----------------|
| Corolla bell-shaped, hairy inside . . . . .  | 7. VANGUERIA.   |
| Corolla tubular, curved, glabrous within, the lobes callous-subulate at the apex . . . . . | 8. ANCYLANTHUS. |

Tribe 4. ALBERTEÆ. Fruit dry, 10-ribbed and furrowed, 2-celled. Seeds not furrowed in front.—Shrub or tree.

Calyx 5-lobed; 3 lobes small, 2 large, ear-like, enlarged in fruit. . . . . 9. ALBERTA.

Tribe 5. COFFEACEÆ. Fruit a 2-celled berry. Seeds with a longitudinal furrow in front.—Trees or shrubs.

Corolla with valvate æstivation.

- |  |                 |
|--|-----------------|
| Style exserted, filiform; stigma thickened, undivided . . . . .          | 10. CANTHIUM.   |
| Style short; stigma 2-lamellar. Albumen simple . . . . .                 | 11. PLECTRONIA. |
| Style exserted; stigma 2-fid, albumen with chinks and fissures . . . . . | 12. GRUMILEA.   |
| Corolla with imbricate or twisted æstivation.                            |                 |
| Corolla salver-shaped, 4-lobed; style much exserted . . . . .            | 13. PAVETTA.    |
| Corolla funnel-shaped, 5-fid; style short; stigma large . . . . .        | 14. KRAUSSIA.   |

Corolla funnel-shaped, 6-lobed ; style filiform ;  
stigma 2-lobed . . . . . 15. *BUNBURYA*.

Tribe 6. *SPERMACOCEÆ*. Fruit nearly dry, with 2-6 pyrenæ or nuts. Stigma 2-lamellar or globose.—Herbs, rarely shrublets. Stipules commonly split into many bristles.

Corolla with a long tube, 5-lobed. Flowers in  
terminal heads . . . . . 16. *PENTANISIA*.

Corolla 4-lobed.

Flowers crowded, glomerate or densely whorled.

Capsules splitting longitudinally into 2 parts,  
1 open, the other closed . . . . . 17. *SPERMACOCE*.

Capsules membranous, splitting across . . . 18. *MITRACARPUM*.

Flowers axillary, subsolitary. Fruit corky, an-  
gular . . . . . 19. *HYDROPHYLAX*.

Tribe 7. *ANTHOSPERMEÆ*. Flowers mostly dioecious. Fruit nearly dry, or rarely fleshy, 2-parted or 2-celled. Stigmas 1 or 2, very long and hairy.—Small shrubs or herbs, with inconspicuous, greenish flowers.

Calyx-margin obsolete. Fruit didymous. Stigmas

2. Flowers paniced . . . . . 20. *GALOPINA*.

Calyx 4-5-toothed. Fruit didymous. Stigmas 2.

Flowers axillary or rarely subpaniced . . . . 21. *ANTHOSPERMUM*.

Calyx 4-5-lobed. Fruit 2-1-seeded. Stigma 1.

Flowers axillary . . . . . 22. *CARPACOCE*.

Calyx 4-5-toothed. Fruit 3-4-celled. Stigmas 2.

Flowers axillary . . . . . 23. *AMBRARIA*.

Tribe 8. *STELLATÆ*. Fruit 2-parted, dry or fleshy. Style 2-parted or 2-fid ; stigmas capitate.—Herbs, with whorled leaves.

Corolla 5-parted. Fruit fleshy . . . . . 24. *RUBIA*.

Corolla 4-parted. Fruit dry . . . . . 25. *GALIUM*.

## TRIBE 1. *GARDENIÆ*. (Gen. 1-5.)

### 1. *BURCHELLIA*, R. Br.

Calyx-tube obovate ; limb equally 5-cleft beyond the middle and prolonged above the ovary. Corolla tubular-funnel-shaped, slightly ventricose, the inner surface of the tube glabrous, except a circle of hairs near the bottom ; throat naked ; limb of 5 short, acute, twisted-imbricate-lobes. Stamens inserted in the middle of the tube ; filaments very short ; anthers included. Stigma oblong-clavate, with 5 crests and 5 tufts of hairs. Berry subglobose, crowned by the calyx, 2-celled.—*Fl. Cap.* iii. p. 2.

*B. Capensis*, R. Br., the only species, is a large shrub, frequent in forests to the east of Swellendam. Leaves ovate, acute, downy. Flowers dull-scarlet, sessile in terminal heads.

### 2. *OXYANTHUS*, DC.

Calyx-tube obovate ; limb short, sharply 5-toothed. Corolla salver-shaped, with a very long, slender tube, a glabrous



throat, and a 5-parted limb; segments much acuminate. Stamens 5, in the throat of the corolla, exserted; anthers acute. Stigma club-shaped. Berry 2-celled, many-seeded.—*Fl. Cap.* iii. p. 3.

Shrubs, with elliptic, acuminate, short-petioled leaves, deciduous stipules, and axillary densely-subcorymbose flowers.—3 species, all from Natal.

### 3. **STYLOCORYNE**, Cav.

Calyx-tube ovate-globose; limb short, tubular, 5-toothed. Corolla salver-shaped, with cylindrical tube and 5-parted limb. Stamens in the throat of the corolla; anthers linear, very long. Style exserted; stigma clavate, undivided or the lobes consolidated. Berry globose, crowned by the calyx, dry, 2-celled; placentas spongy. Seeds numerous.—*Fl. Cap.* iii. p. 4.

Trees or shrubs.—*S. cuspidata*, E. M., found near Natal, is a large, glabrous shrub, with petioled, oval-oblong, tapering, membranous leaves, and axillary, trichotomous corymbs on longish peduncles. Flowers not seen.

### 4. **GARDENIA**, Ellis.

Calyx-tube ovate, often ribbed; limb tubular, truncate, toothed cleft or parted. Corolla salver-shaped, often with a long tube, or subcampanulate or funnel-shaped; limb 5-9-parted, twisted in bud, then spreading. Anthers 5-9, linear, nearly sessile in the naked throat of the corolla, exserted. Style long; stigma clavate, 2-fid or 2-dentate. Ovary 1-celled, with 2-5 prominent, incomplete septa. Berry fleshy, crowned by the calyx, imperfectly 2-5-celled.—*Fl. Cap.* iii. p. 4; *Thes. Cap. t.* 5.

Trees or shrubs, with solitary, axillary or terminal, often large, showy and sweetly-scented flowers.—7 Cape species, all Eastern or from Natal.

### 5. **RANDIA**, Linn.

Calyx-tube obovate; limb tubular, 5-lobed. Corolla funnel-shaped, with a short tube; limb 5-parted, twisted-imbricate in bud. Anthers sessile in the throat of the tube, short or long. Stigma thickened, deeply 2-lobed. Berry nearly dry, crowned by the calyx, 2-celled, many-seeded.—*Fl. Cap.* iii. p. 7; *Thes. Cap. t.* 33, 34, 35.

Much-branched, rigid, often spiny, small trees or shrubs. Leaves subsessile. Flowers axillary, usually solitary, subsessile.—2 species, from the Eastern districts, Caffraria, and Natal.

## TRIBE 2. HEDYOTIDÆ. (Gen. 6.)

### 6. **HEDYOTIS**, Lam.

Calyx-tube ovate or subglobose; limb 4- rarely 5-toothed.

Corolla tubular ; limb 4-, rarely 5-lobed, throat villous or glabrous. Stamens a little exserted, or sessile and included. Stigma simple or 2-fid. Capsules subglobose, membranous, crowned with the distant calycine lobes, 2-celled, dehiscing at the summit. Seeds very numerous, minute, on subglobose placentas.—*Fl. Cap.* iii. p. 8.

A very large tropical and subtropical genus. The 17 or 18 Cape species are chiefly Eastern or from Natal ; they are small herbs, with opposite leaves, setulose stipules, and either scattered or aggregated small flowers.

### TRIBE 3. GUETTARDEÆ. (Gen. 7–8.)

#### 7. VANGUERIA, Comm.

Calyx-tube short, obovate or hemispherical ; limb spreading, 5- or rarely 4-toothed or parted. Corolla bell-shaped, 5- rarely 4-cleft, hairy inside, the lobes lanceolate, acute, reflexed. Stamens with very short filaments, and scarcely exserted, oblong, acute anthers. Stigma capitate, cylindrical, thick or truncate at both ends, obtuse or toothed. Drupe when ripe not crowned by the calyx-lobes, but having a sinuated terminal areola, containing 5, or by abortion 4–2, bony 1-seeded nuts which are obtuse at base, acute at apex.—*Fl. Cap.* iii. p. 13.

Shrubs or small trees, with ovate or oblong leaves, acute stipules and cymose or paniced, axillary, small, white or reddish flowers.—7 Cape species, all Eastern.

#### 8. ANCYLANTHUS, Desf.

Calyx-tube adnate, hemispherical ; limb 5-parted, the segments lanceolate. Corolla tubular, incurved, the tube at base within girt by a ring of stiff, reflexed hairs, otherwise nude, widening at the throat ; limb subequally 5-parted, the two upper lobes longer, all erecto-patent, callous-subulate at their apices. Anthers 5, sagittate, subsessile in the throat of the corolla. Ovary 5-celled ; ovules solitary ; style shortly exserted, filiform ; stigma cylindrical-mitriform, truncate at base, bluntly 5-lobed at apex. Fruit ?—*DC. Prod.* iv. p. 468.

*A. rubiginosa*, Desf., first found in Angola, has been sent by Mr. Moffatt to Dr. Pappe, from Masilikatzis country. It is a shrub, with hairy branches and twigs ; short petioled, elliptical, obtuse leaves, pubescent above, more densely so and netted-veined beneath. Peduncles short, axillary, about 3-flowered. Flowers pedicellate, over 1 inch long, clothed externally with foxy or rust-coloured, spreading hairs.

### TRIBE 4. ALBERTEÆ. (Gen. 9.)

#### 9. ALBERTA, E. Mey.

Calyx-tube turbinate, 10-ribbed ; limb 5-fid, 3 lobes short, acute, 2 oblong, obtuse, enlarged in fruit. Corolla elongate,

tubular, incurved, throat naked; limb 5-fid, with very short erect imbricate, acute lobes. Stamens included; anthers sessile, linear. Ovary 2-celled; ovules solitary; style filiform; stigma attenuated, minutely 2-fid. Fruit dry, 10-ribbed and furrowed, crowned with the two opposite, leaf-like, dilated, membranous, veiny and coloured calyx-lobes, 2-celled; cells 1-seeded. Seed oblong, convex at back, flat in front.—*Fl. Cap.* iii. p. 16; *Thes. Cap.* t. 45.

*A. magna*, E. M., the only species, is a shrub or small tree, native of the Eastern district and Natal, with oblong, obtuse, leathery, glabrous and glossy leaves, cup-like stipules, and a terminal, much-branched panicle of purplish, silky flowers.

#### TRIBE 5. COFFEACEÆ. (Gen. 10–15.)

##### 10. CANTHIUM, Lam.

Calyx-tube ovate; limb short, 4–5-toothed. Corolla with a short tube, a bearded throat, and 4–5 spreading lobes, valvate in bud. Anthers in the throat, scarcely exerted. Style filiform, exerted; stigma undivided, thick, ovato-globose or mitre-shaped. Berry globose or didymous, crowned with the calyx-teeth, fleshy, 2-celled. Seeds solitary.—*Fl. Cap.* iii. p. 16; *Thes. Cap.* t. 22.

Unarmed or spinous shrubs. Leaves coriaceous. Peduncles axillary, short, many-flowered.—2 Cape species, both Eastern.

##### 11. PLECTRONIA, Linn.

Calyx-tube obovate or oblong; limb 5-toothed. Corolla somewhat funnel-shaped; limb 5-parted; lobes acute, reflexed, valvate in bud, throat hairy or nude. Stamens in the throat, subexserted. Style short; stigma subcapitate, of two appressed laminae. Berry fleshy, obovate-oblong, compressed, didymous, of 2 pyrenae.—*Fl. Cap.* iii. p. 17.

Armed or unarmed shrubs. Peduncles axillary, corymbose.—5 species, dispersed.

##### 12. GRUMILEA, Gærtn.

Calyx-tube urceolate; limb shortly 5-toothed. Corolla with a short tube, villous in the throat; limb 5-parted, reflexed, valvate in bud. Stamens subexserted; anthers oblong. Ovary 2-celled; cells 1-ovuled; style exerted; stigma 2-fid. Berry globose, 2-seeded. Seed plano-convex, the albumen traversed by chinks and fissures.—*Fl. Cap.* iii. p. 21.

Shrubs with the habit of *Canthium*.—*G. cymosa*, our only species, occurs in the Eastern district and at Natal.

##### 13. PAVETTA, Linn.

Calyx-tube ovate; limb 4-toothed or -cleft. Corolla salver-

shaped, with a long, slender tube and a 4-parted, spreading limb. Anthers 4, sessile in the throat. Style much exserted; stigma clavate, entire or nearly so. Berry drupaceous, 2-celled, crowned with the calyx-limb.—*Fl. Cap.* iii. p. 19; *Thes. Cap. t.* 131.

Shrubs or small trees, with corymbose, often very handsome, white or yellow flowers.—10 Cape species, all Eastern or from Natal.

#### 14. **KRAUSSIA**, Harv.

Calyx-tube ovate; limb short, 5-cleft. Corolla funnel-shaped, tube short, obconic, limb 5-cleft, the lobes oblong, imbricate in bud; throat hairy. Stamens in the throat, exserted; filaments short; anthers erect, attenuate. Ovary 2-celled; cells 1-ovuled; style short; stigma clavate or fusiform, striato-lamellate, 2-fid, the lobes erect or revolute. Berry globose, crowned with the calyx-limb, 2- or by abortion 1-seeded.—*Fl. Cap.* iii. p. 22; *Thes. Cap. t.* 21.

Glabrous shrubs, with oblong or lanceolate, acute, glossy, shortly petioled leaves, abruptly acuminate stipules and axillary cymes of white flowers.—4 species, all from Natal.

#### 15. **BUNBURYA**, Meisn.

Calyx-tube subglobose; limb shortly 2-labiate, 6-toothed. Corolla funnel-shaped; limb 6-lobed, the lobes lanceolate-oblong, half as long as the tube, imbricate in bud. Stamens in the throat, exserted; filaments short; anthers linear-oblong, incumbent. Ovary 2-celled; cells 1-ovuled; style filiform, glabrous; stigma 2-lamellate, the lobes short, acute. Fruit . . .—*Fl. Cap.* iii. p. 23; *Thes. Cap. t.* 132.

*B. Capensis*, Meisn., the only species, is a shrub with the habit of the Coffee-bush. Leaves shortly-petioled, ovato-lanceolate, tapering to a bluntish point. Cymes axillary, 3-4-flowered, subsessile.—Grows in Caffraria and Natal.

### TRIBE 6. SPERMACEÆ. (Gen. 16-19.)

#### 16. **PENTANISIA**, Harv.

Calyx-tube obovate or turbinate; limb with 2-3 (rarely 4) elongate, linear-subulate lobes, and 2-3 small, accessory ones. Corolla salver-shaped, with a long tube, a bearded throat, and a 5-lobed limb. Stamens in the throat, subexserted; anthers oblong. Ovary 2-celled; cells 1-ovuled; style filiform; stigma 2-fid, with linear lobes. Capsules coriaceous, didymous, crowned by the unequal calyx-lobes, 2-parted into monospermous, indehiscent nuts.—*Fl. Cap.* iii. p. 24.

*P. variabilis*, the only species, a native of the Eastern district and Natal, is an extremely variable, glabrous pubescent or hairy, perennial thick-

rooted herb. Leaves broad or narrow, sessile; stipules of 3-4 bristles on each side; flowers lilac-purple, in many-flowered, peduncled heads or short spikes. Flowers very rarely 4-parted.

### 17. SPERMACOCE, Mey.

Calyx-tube ovate or turbinate; limb 2-4-lobed, sometimes with intermediate accessory teeth. Corolla salver- or funnel-shaped, 4-lobed. Stigma 2-fid or undivided. Fruit crowned with the calyx, dry, 2-celled; carpels separating into two 1-seeded pieces from the apex, one closed by the adnate septum, the other open. Seed oval-oblong, with a longitudinal furrow.—*Fl. Cap.* iii. p. 23.

Tropical herbs or undershrubs, with 4-sided branches, opposite leaves, and sheathing, bristle-fringed stipules. Flowers axillary, sessile, crowded.—*S. Natalensis*, our only species, occurs at Natal.

### 18. MITRACARPUM, Zucc.

Calyx-tube ovate; limb 4-toothed, 2 of the teeth larger than the others. Corolla salver-shaped, with a terete tube, having within the base a ring of hairs; throat nude; limb 4-lobed. Stigma 2-fid. Capsule membranous, crowned with the calyx, 2-celled, with circumscissile dehiscence.—*Fl. Cap.* iii. p. 25.

Herbs, resembling *Spermacoce*.—*M. Dregeanum*, our only species, grows in Natal. It is hairy, with lanceolate revolute-margined leaves, and flowers in capitate whorls or fascicles.

### 19. HYDROPHYLAX, Linn. f.

Calyx-tube ovate, angular; limb sharply 4-toothed. Corolla widely funnel-shaped, 4-lobed. Anthers sessile in the throat, exserted, linear-oblong. Stigma roundly 2-lobed. Fruit dry, corky, angular, lanceolate or oblong, crowned with the calyx, 2-celled.—*Fl. Cap.* iii. p. 25.

Glabrous, creeping, maritime herbs. Stems terete. Leaves ovate-oblong, fleshy, joined with the stipules at base into a cup-like, toothed sheath. Flowers axillary, sessile, 1-2 together.—*H. carnosus*, Sond., our only species, occurs in Natal; it comes close to *H. maritima*, Linn.

## TRIBE 7. ANTHOSPERMEÆ. (Gen. 20-23.)

### 20. GALOPINA, Thunb.

Flowers often polygamous. Calyx-tube obovate; limb 4-toothed, very small. Corolla subrotate, 4-5-parted; lobes oblong, lanceolate, patent-reflexed. Stamens 3-5, in the base of the corolla; anthers oblong, slightly exserted. Styles 2, with long, hairy stigmas. Fruit obovate-didymous, of 2 indehiscent,



at length separating carpels, warted at back, 1-seeded, flat in front.—*Fl. Cap.* iii. *p.* 26.

Herbaceous perennials, hairy or glabrous, with ovate or lanceolate leaves and paniced, small flowers, natives of the Eastern district, Caffraria, and Natal.

### 21. ANTHOSPERMUM, Linn.

Flowers diœcious or hermaphrodite. Calyx-tube obovate; limb 4-5-toothed. Corolla tubular; limb 4-5-parted, the lobes linear or lanceolate, spreading, revolute, valvate in bud. Stamens inserted within the tube; anthers versatile, exserted. Styles 2, mostly very short, rarely connate; stigmas 2, very long and hairy. Fruit of 2 easily separable, indehiscent, 1-seeded carpels, which are a little compressed at the raphe, and joined by a concave commissure. Seeds erect.—*Fl. Cap.* iii. *p.* 26.

Small, much-branched, closely leafy shrubs or herbs. Leaves opposite or whorled, linear or lanceolate, rarely ovate or oblong. Flowers axillary or very rarely panicled.—18 species, dispersed.

### 22. CARPACOCE, Sond.

Flowers polygamous.—Hermaphrodite: Calyx 5-fid; lobes subulate, equal or 1 longer. Corolla shortly funnel-shaped, 5-lobed, the lobes spreading, linear-lanceolate, with a reversed tooth above the thickened apex. Stamens within the tube; filaments capillary; anthers linear-oblong, exserted. Ovary 2-celled, 2-ovuled; style very short; stigma single, very long, hairy. Fruit crowned by the calyx, 2-seeded, didymous, easily separable when ripe.—Male: On the same plant; ovary abortive without style or stigma.—*Fl. Cap.* iii. *p.* 32.

Small, slender undershrubs, sometimes with a very offensive odour. Flowers axillary, solitary.—2 species, dispersed.

### 23. AMBRARIA, Cruse.

Flowers of *Anthospermum*, diœcious. Capsule indehiscent, 3-celled, the intermediate cell empty, the lateral 1-seeded; or 4-celled, 2 cells only fertile.—*Fl. Cap.* iii. *p.* 33.

Small shrubs, with linear leaves and axillary flowers.—4 ascertained species, all Western; some others imperfectly known and undescribed.

## TRIBE 8. STELLATÆ. (Gen. 24-25.)

### 24. RUBIA, Linn.

Calyx-tube ovate-globose; limb 4-toothed. Corolla 4-5-parted, rotate. Stamens short. Fruit didymous, nearly globose, dry or juicy.—*Fl. Cap.* iii. *p.* 34.

Herbs or undershrubs, several yielding the red dye called "madder" from their roots. Leaves 4-10 in a whorl. Flowers small, greenish-white or pale yellow.—3 species, none endemic, in the Eastern districts.

### 25. **GALIUM**, Scop.

Calyx-tube ovate-globose or oblong; limb obsolete. Corolla 4-parted, rotate. Stamens short. Styles 2, with capitate stigmas. Fruit didymous, roundish, dry, separating into 2 1-seeded carpels.—*Fl. Cap.* iii. p. 35.

Branching, erect or procumbent, weak herbs. Leaves 4 or many in a whorl. Flowers small, white yellow or greenish.—14 Cape species, dispersed.

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## ORDER LXVIII. **VALERIANEÆ**.

Flowers mostly bisexual. Calyx-tube adnate; limb 3-4-toothed, often enlarged after flowering. Corolla epigynous, tubular, subequally 3-5-lobed, imbricate in bud. Stamens 1-5, in the tube, separate. Ovary inferior, 1-3-celled; ovules solitary, pendulous; style filiform. Fruit dry, crowned with the calyx-limb, 1-seeded. Seed pendulous, without albumen.—Herbs, with opposite, often cut leaves, without stipules. Flowers in cymes or fascicles, or solitary in the forks.

Calyx unequally toothed, crowning the fruit, unchanged. . . . .

1. **VALERIANELLA**.

Calyx inrolled in flower, opening in fruit into a feathery pappus . . . . .

2. **VALERIANA**.

### 1. **VALERIANELLA**, Poll.

Calyx 5-toothed. Corolla regular, 5-lobed. Stamens 3. Stigma undivided or 3-fid. Fruit 3-celled, rather membranous, 2 of the cells only fertile.—*Fl. Cap.* iii. p. 40.

Forking annuals, with oblong or linear, entire or toothed leaves. Flowers solitary in the forks or corymbose, minute.—*V. eriocarpa*, introduced from Europe, occurs near Grootvadersbosch.

### 2. **VALERIANA**, Linn.

Calyx-limb involute at the time of flowering (resembling a thickened rim), but at length unfolding into a deciduous pappus, composed of many plumose bristles. Corolla 5-lobed, gibbous at base. Stamens 3. Fruit 1-celled and 1-seeded at maturity.—*Fl. Cap.* iii. p. 40.

Herbs or half-shrubs.—*V. Capensis*, our only species, has imparipinnate-parted leaves; the leaflets opposite or alternate, ovate, acute, toothed; cymes paniced, pinkish. It grows in various parts of the country.

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ORDER LXIX. **DIPSACEÆ.**

Flowers complete, crowded in heads on a common receptacle, surrounded by a general involucre, each flower also seated in a cup-like, dry, persistent involucel. Calyx adnate. Corolla epigynous, tubular; limb oblique, 4-5-lobed, imbricate in bud. Stamens 4, in the tube, alternate with the lobes, exserted, separate. Ovary inferior, 1-celled; ovule solitary, pendulous; style filiform; stigma simple. Fruit a dry utricle, crowned by the calyx-limb, and enclosed in the cup-like involucel. Seed pendulous, albuminous.—Herbs or undershrubs, with opposite or whorled, often pinnatisect or lyrate, exstipulate leaves.

Involucral scales imbricate in several rows. Calyx cup-like or discoid . . . . . 1. **CEPHALARIA**.  
Involucral scales sub-2-seriate. Calyx-limb crowned with 5 bristles . . . . . 2. **SCABIOSA**.

1. **CEPHALARIA**, Schrad.

Involucre of many imbricated leaves, shorter than the paleæ of the receptacle. Involucel 4-angled, 8-furrowed, with a 4-8-toothed crown. Calyx-limb cup-shaped or discoid. Corolla 4-cleft. Stamens 4. Fruit 4-sided, crowned by the limb of the calyx, girt by the involucel.—*Fl. Cap.* iii. p. 41.

Biennials. Leaves toothed or pinnatifid, rarely entire. Heads of flowers globose; paleæ imbricated, outer ones sterile. Corolla white creamy or lilac.—5 Cape species, dispersed.

2. **SCABIOSA**, Linn.

Involucre of many leaves, nearly 2-seriate. Receptacle with paleæ. Involucels usually cylindrical, with 8 pit-like depressions, ending in a bell-shaped or rotate, scarious limb. Calyx-limb tapering into a neck above the ovary, and ending in 5 bristles. Corolla 4-5-cleft. Stamens 4.—*Fl. Cap.* iii. p. 43.

Perennials or undershrubs, with variably cut leaves. Flower-heads flat-topped, often radiate.—3 Cape species, of which 2 are endemic, dispersed.

ORDER LXX. **COMPOSITÆ.**

Flowers arranged in heads (*capitula*) on a general receptacle, surrounded by an involucre of several, separate or cohering, dry and membranous or green and leaf-like scales or leaflets (bracts). Heads many-flowered few-flowered or 1-flowered, separate or crowded in glomerules. Flowers sessile

on a flat or convex receptacle. Calyx-tube adnate; limb (called *pappus*) very much varied, either obsolete, annular, or coroniform, toothed, scaly, bristle-shaped or feathery, usually enlarging as the ovary swells, and more or less persistent. Corolla epigynous, tubular, with valvate æstivation, either regular and 4-5-toothed, or 1-labiate and strap-shaped (*ligulate*), or rarely 2-labiate. Stamens in the tube of the corolla, alternate with its lobes; anthers usually united by their edges into a tube surrounding the style. Ovary with a single erect ovule; style filiform, 2-fid in the fertile flowers, mostly simple in the abortive. Fruit a small dry nut or achene, usually crowned with the pappus. Seed without albumen.—A vast and greatly diversified Order, corresponding to the class *Syngenesia* in the Linnean system.

## TABLE OF THE TRIBES.

\* *Disk-flowers tubular, regular, 5-toothed.*

Tribe 1. VERNONIACEÆ. Style-branches long, much exserted, filiform, equally hispid or bristly on the outer surface.—Heads always discoid. Leaves alternate. (Gen. 1-6.)

Tribe 2. EUPATORIACEÆ. Style-branches long, much exserted, obtuse or thickened at the point, minutely granulated on the outer surface.—Heads always discoid. Leaves opposite or alternate. (Gen. 7-10.)

Tribe 3. ASTEROIDEÆ. Style-branches linear or lance-linear, flattish or flattened upwards, mostly acute, minutely and equally downy on the outer surface.—Habit various. (Gen. 11-38.)

Tribe 4. SENECTIONIDEÆ. Style-branches linear, flattish, truncate, bristly at the apex only or tipped with a short, bristly cone. Habit various. (Gen. 39-124.)

Tribe 5. CYNAREÆ. Style suddenly thickened below the apex, and often hispid at the point of thickening; its branches convex, partially cohering or separate, minutely downy on the outer surface.—Habit various. (Gen. 125-146.)

\*\* *Flowers all strap-shaped and bisexual.*

Tribe 6. CICHORACEÆ. Style-branches long, filiform, equally pubescent on the outer surface.—Juice milky, very bitter. (Gen. 147-154.)

## TABLE OF THE GENERA.

## TRIBE 1. VERNONIACEÆ. (Gen. 1-6.)

Heads several-flowered; involucre of many imbricating scales.

Pappus none, or a small, fleshy ring.

All the flowers perfect, bisexual, with bell-shaped corollas . . . . .

1. ETHULIA.

Central-flowers male, funnel-shaped; marginal female, filiform, in many rows . . . . .

2. LITOGYNE.

Pappus of many bristles, in 2 or more rows.

Involucre scales and leaves spinous-pointed . . . . .

3. HOPLOPHYLLUM.

Involucre scales not spinous-pointed . . . . .

4. VERNONIA.

Pappus of 7-9 spreading, flat, white scales . . . . .

5. PLATYCARPHA.

Heads 1-flowered, corymbose; involucre of 2 opposite scales . . . . .

6. CORYMBIUM.

## TRIBE 2. EUPATORIACEÆ. (Gen. 7-10.)

Leaves alternate. Pappus of 3-5 unequal scales . 7. ANISOCHÆTA.  
 Leaves opposite.

Heads many-flowered.

Pappus of 5-10 broad, toothed, pointed scales 8. AGERATUM.

Pappus of 3-5 gland-tipped bristles . . . 9. ADENOSTEMMA.

Heads 4-flowered. Pappus of many slender  
 bristles . . . . . 10. MIKANIA.

## TRIBE 3. ASTEROIDEÆ. (Gen. 11-38.)

1. Heads conspicuously radiate; rays blue, pink  
 or white (not yellow).

Receptacle covered with rigid paleæ (chaff) . 12. AMELLUS.

Receptacle without paleæ.

Ray and disk-flowers both with bristle-  
 shaped pappus.

Pappus-bristles plumose (feathered) . . 13. MAIREA.

Pappus-bristles rough, but not feathered.

Pappus uniform, of many similar bristles 17. ASTER.

Pappus double, outer bristles very short 18. DIPLOPAPPUS.

Ray-flowers without pappus; disk-flowers  
 with bristle-shaped pappus.

Disk-flowers fertile, with well-feathered  
 pappus . . . . . 16. CHARIEIS.

Disk-flowers sterile, with serrated pappus 14. GYMNOSTEPHIUM.

All the flowers without pappus. Leaves  
 pinnatifid . . . . . 21. GARULEUM.

2. Heads conspicuously radiate; rays yellow.

Receptacle nude, smooth or minutely rough.

Pappus well-feathered (plumose) . . . . 13. MAIREA.

Pappus bristle-shaped, rough, in one row.

Anthers not tailed at base . . . . . 20. NIDORELLA.

Anthers tailed at base . . . . . 33. INULA.

Pappus bristle-shaped, in many rows,  
 copious . . . . . 11. ALCIOPE.

Pappus double; outer of short scales, inner  
 of bristles . . . . . 34. PULICARIA.

Pappus none . . . . . 15. ANAGLYPHA.

Receptacle conspicuously honeycombed or  
 fimbriiferous.

Rays neuter, with glabrous, abortive ovaries 36. CYPSELODONTIA.

Rays female; all the achenes hairy. Pap-  
 pus double.

Pappus of several-toothed bristles, outer  
 shorter . . . . . 37. MINUROTHAMNUS.

Pappus of broad scales, all or half of  
 them awned . . . . . 38. GEIGERIA.

3. Heads heterogamous, either discoid or very im-  
 perfectly radiate; the margin flower fe-  
 male, filiform, or with very short unilabiate  
 or bilabiate corollas (imperfect rays).

Pappus double; outer of short scales, inner  
 of bristles . . . . . 34. PULICARIA.

Pappus single, of few or many slender bristles.  
 Margin-flower imperfectly ligulate (unila-  
 biate).



- Rays white; disk yellow . . . . . 19. ERIGERON.  
 Ray yellow, as well as the disk . . . . . 20. NIDORELLA.  
 Marginal flowers filiform, in 1 row. Leaves  
 heath-like . . . . . 25. LEPTOTHAMNUS.  
 Marginal flowers filiform, in many rows.  
 Leaves more or less broad.  
 Anthers without tails . . . . . 26. CONYZA.  
 Anthers tailed at the base . . . . . 32. BLUMEA.  
 Pappus 0, or of very minute, flat scales.  
 Receptacles flat. Disk-flowers 5-toothed,  
 sterile . . . . . 31. DENEKIA.  
 Receptacles conical. Disk-flowers 4-toothed . . . . . 27. DICHROCEPHALA.  
 4. Heads dioecious, discoid; male and female  
 flowers in separate heads, on distinct roots.  
 (Balsamic shrubs or trees.)  
 Achenes woolly, without pappus . . . . . 30. TARCHONANTHUS.  
 Achenes pubescent, with copious, bristle-  
 shaped pappus . . . . . 29. BRACHYLENA.  
 5. Heads monogamous, discoid; all the flowers  
 tubular and perfect.  
 Receptacles covered with rigid scales (*paleæ*) . 12. AMELLUS.  
 Receptacles nude.  
 Anthers not tailed at base.  
 Pappus bristle-shaped, uniform.  
 Pappus 1-seriate, very slender, deci-  
 duous . . . . . 23. CHRYSOCOMA.  
 Pappus in many rows, rigid, persistent . 24. PTERONIA.  
 Pappus double; outer of short, narrow  
 scales; inner of long, rough bristles . 22. FRESENIA.  
 Anthers tailed at base; pappus copious, of  
 many bristles, or of scales and bristles . 35. PEGOLETTIA.  
 6. Heads compound, *i. e.* many small, discoid heads  
 united on a common receptacle, with a general  
 involucre. Pappus 0 . . . . . 28. SPHÆRANTHUS.

TRIBE 4. SENECTIONIDEÆ. (Gen. 39-124.)

Subtribe 1. HELIANTHÆ. Leaves opposite, broad, mostly petioled.  
 Receptacles bearing paleæ among the disk-flowers. Anthers without tails,  
 short, dark-coloured. Pappus of a few stiff, persistent awns or 0. (Gen.  
 39-44.)

Achenes beakless, without pappus.

Receptacles flat. Involucral scales 2-seriate,  
 ovate, acute . . . . . 39. ECLIPTA.

Receptacles flattish. Involucre double; outer of  
 5, spathulate, spreading, glandular leafy scales . 40. SIEGESBECKIA.

Receptacles conical. Involucral scales short,  
 appressed . . . . . 44. SPILANTHES.

Achenes beaked, bearing 2-5, rigid, retrorsely his-  
 pid bristles . . . . . 42. BIDENS.

Achenes beakless, with pappus.

Pappus cup-shaped, toothed . . . . . 41. WEDELIA.

Pappus of 8-10, rigid, unequal, rough bristles . 43. LIPOTRICHE.

Subtribe 2. HELENIÆ. Leaves (except in *Oedera*) alternate. Recep-  
 tacles nude or bearing paleæ. Anthers without tails. Pappus of several

flat, dry, separate, conspicuous scales in single rows (in *Ursinia* with a few slender bristles as an inner pappus). (Gen. 45-49.)

1. Receptacles without paleæ. (A glabrous, aquatic herb) . . . . . 45. CADISCUS.
2. Receptacles bearing paleæ among the disk-flowers.
  - Leaves opposite, linear. Heads conglomerate, involucred . . . . . 46. OEDERA.
  - Leaves alternate. Heads separate.
    - Rays female. Pappus of 2-3 unequal scales. 47. CALLILEPIS.
    - Rays neuter. Pappus of 5 obovate, obtuse scales. Achenes with a silky tuft at base, narrow . . . . . 48. SPHENOGYNE.
    - Rays neuter. Pappus of 5 obovate scales, and 5 inner slender bristles. Achenes obovate, quite glabrous . . . . . 49. URSINIA.

Subtribe 3. ANTHEMIDÆE. Leaves rarely opposite. Heads discoid or radiate. Receptacles nude or bearing paleæ. Anthers wholly without tails, blunt at base. Pappus either 0, or coroniform, or consisting of a few minute scales or jointed hairs. (Gen. 50-75.)

1. Receptacles bearing paleæ between the flowers.
  - Heads radiate. Achenes glabrous. Leaves opposite . . . . . 50. EUMORPHIA.
  - Heads more or less radiate. Achenes woolly.
    - Disk-flowers perfect. Leaves pinnatisect . 51. LASIOSPERMUM.
    - Disk-flowers male. Leaves simple or 3-fid. Rigid shrubs . . . . . 75. ERIOCEPHALUS.
  - Heads homogamous, discoid. Pappus either minutely scaly, or of a few short hairs, or 0. 74. ATHANASIA.
2. Receptacles nude, not bearing paleæ among the flowers.
  - \* Heads discoid.
    - Corolla of disk-flowers 5-toothed.
      - Heads homogamous (all flowers similar and perfect).
        - Pappus 0 (shrubs or half-shrubs).
          - Corolla glabrous.
            - Leaves linear, entire . . . . . 73. STILPNOPHYTUM.
            - Leaves cuneate, 3-5-lobed or toothed . . . . . 66. PENTZIA.
          - Corolla glandular. Achenes terete. 68. ADENOSOLEN.
          - Corolla pubescent. Achenes scabrid. 60. BRACHYMERIS.
        - Pappus membranous, oblique, ear-shaped.
          - Small shrubs or undershrubs . . . 66. PENTZIA.
          - Annuals, with pinnatisect leaves . 61. MATRICARIA.
        - Pappus of several small, equal scales . 67. MARASMODES.
      - Heads heterogamous; marginal flowers filiform, female.
        - Disk-flowers male, with abortive ovaries . . . . . 65. HIPPIA.
        - Disk-flowers fertile, ovuliferous . . 64. ARTEMISIA.
    - Corolla of disk-flowers 4-toothed.
      - Tube of corolla not flattened or winged.

- Shrublets or half-woody perennials.  
 Achenes glabrous. Flowers all perfect . . . . . 62. TANACETUM.  
 Marginal achenes villous; of the disk glabrous, abortive . . . . 63. SCHISTOSTEPHIUM.  
 Annuals with pinnatisect leaves . . . 61. MATRICARIA.  
 Tube of corolla flattened or winged.  
 Annuals or small, tufted perennials.  
 Corolla not spurred at base . . . 71. COTULA.  
 Corolla with a broad spur, infolding the ovary . . . . . 70. OTOCHLAMYS.  
 Virgate shrubs, with entire, sessile leaves . . . . . 69. PEYROUSEA.  
 \*\* Heads radiate.  
 Corolla of disk-flowers 4-toothed.  
 Herbs with multifid leaves.  
 Disk-flowers flat-tubed. Achenes flat . . . . . 72. CENIA.  
 Disk-flowers terete. Achenes angular . . . . . 61. MATRICARIA.  
 Small shrubs or half-shrubs.  
 Rays female. Leaves linear or 3-fid. 58. ADENACHÆNA.  
 Rays neuter.  
 Leaves lobed or pinnatifid . . . 52. LIDBECKIA.  
 Leaves linear, entire, silky . . . 53. THAMINOPHYLLUM.  
 Corolla of disk-flowers 5-toothed.  
 Involucral scales in 1 row, connate or concrete.  
 Disk fertile; all the achenes glabrous. 54. GAMOLEPIS.  
 Disk sterile; ray-achenes silky, fertile . . . . . 55. STEIRODISCUS.  
 Involucral-scales imbricate, in few or many rows.  
 Rays white.  
 Small shrubs or half-shrubs.  
 Achenes papillose or glandular.  
 Receptacles flat. Ray-flowers some filiform, some ligulate. 57. PHYMASPERMUM.  
 Receptacles convèx. Ray-flowers all ligulate . . . 58. ADENACHÆNA.  
 Achenes angular, smooth . . . 59. CHRYSANTHEMUM.  
 Herbs with multifid leaves . . . 61. MATRICARIA.  
 Rays yellow.  
 Heads corymbose; rays 1-2 . . . 56. IOCASTE.  
 Heads solitary, terminal; rays several . . . . . 59. CHRYSANTHEMUM.

Subtribe 4. GNAPHALIEÆ. Leaves alternate, very frequently woolly. Anthers tailed at base. Involucral scales mostly membranous, shining, not withering. Pappus various. (Gen. 76-106.)

1. Heads 1-flowered, either in spikes or glomerules.  
 Pappus feathery . . . . . 92. STOEBE.  
 Pappus 0 . . . . . 93. PEROTRICHE.
2. Heads several-flowered, discoid.

- \* *Homogamous*; all the flowers perfect, 5-toothed.  
 Pappus of several, feathery bristles.  
 Heads large, showy, solitary or corymbose. 79. *HELIPTERUM*.  
 Heads small, sessile, in tufts or spikes.  
 Pappus plumes concrete at base, feathered in the upper half only . . . . . 87. *ELYTROPAPPUS*.  
 Pappus plumes separate, feathered throughout . . . . . 88. *PTEROTHRIX*.  
 Pappus of several, simple or serrate bristles.  
 Achenes glabrous, smooth or granulated.  
 Pappus 2-seriate . . . . . 77. *LEONTONYX*.  
 Pappus 1-seriate.  
 Achenes sessile, granulated. Leaves not pungent.  
 Pappus rough or serrated . . . . . 78. *HELICHRYSUM*.  
 Pappus beaded near the tip . . . . . 82. *ERIOSPHERA*.  
 Ovaries stipitate, smooth. Leaves pungent, often spirally twisted . . . . . 84. *METALASIA*.  
 Achenes hairy or woolly.  
 Achenes beakless . . . . . 85. *LACHNOSPERMUM*.  
 Achenes with a glabrous, thick beak . . . . . 86. *PACHYRHYNCUS*.  
 Pappus of 5, ovate, short, toothed scales . . . . . 104. *OLIGODORA*.  
 \*\* *Heterogamous*; disk-flowers perfect; marginal filiform, female.  
 Pappus of all the flowers amply feathered . . . . . 83. *LASIOPOGON*.  
 Pappus bristle-shaped.  
 Marginal flowers without pappus . . . . . 81. *AMPHIDOXIA*.  
 Marginal flowers with pappus, as the disk-flowers.  
 Receptacles bearing paleæ among the flowers . . . . . 76. *RHYNEA*.  
 Receptacles nude or fimbriiferous.  
 Pappus 2-seriate . . . . . 77. *LEONTONYX*.  
 Pappus 1-seriate.  
 Female flowers few . . . . . 78. *HELICHRYSUM*.  
 Female flowers very many, in several rows . . . . . 80. *GNAPHALIUM*.  
 \*\*\* *Heteromonœcious*; disk-flowers male; marginal female, filiform.  
 Heads large, solitary; involucre radiating, lustrous . . . . . 95. *PHÆNOCOMA*.  
 Heads small, corymbose; involucre radiating.  
 Receptacles very woolly, without paleæ . . . . . 97. *ANAXETON*.  
 Receptacles nude in centre, with marginal paleæ . . . . . 96. *PETALACTE*.  
 Heads small, in tufts or spikes; involucre not radiating . . . . . 94. *TRICHOGYNE*.  
 3. Heads several-flowered, radiate; rays ligulate.  
 Ray-flowers white or purple, not yellow.  
 Pappus of several, feathered bristles.  
 Heads 2-flowered; bristles feathered above . . . . . 91. *DISPARAGO*.  
 Heads 6-15-flowered; bristles feathered throughout . . . . . 89. *AMPHIGLOSSA*.

- Pappus of rough bristles, or of alternate bristles and short scales.
- Involucral scales in few rows. (Densely-tufted herb.) . . . . . 90. BRYOMORPHA.
- Involucral scales in many rows, bristle-pointed . . . . . 98. ATHRIXIA.
- Pappus of several, very short scales . . . 105. OSMITES.
- Pappus 0 ; ray neuter . . . . . 106. OSMITOPSIS.
- Ray-flowers yellow, often coppery beneath.
- Receptacles nude. Pappus of many rigid bristles . . . . . 99. ANTITHRIXIA.
- Receptacles nude. Pappus, in the ray, of short scales ; in the disk, of feathered bristles . . . . . 100. LEYSSERA.
- Receptacles honeycombed or fimbriiferous ; pappus of several, short, free or connate scales . . . . . 102. NESTLERA.
- Receptacles bearing paleæ between the flowers.
- Pappus uniform, of separate or connate scales, or crown-like, entire or crenate . . . . . 103. RELHANIA.
- Pappus of disk-flowers double, the outer of short, broad scales ; the inner of 2 long bristles . . . . . 101. ROSENIA.
- Subtribe 5. SENECTIONEÆ. Leaves alternate. Heads radiate or discoid. Receptacles nude. Anthers without tails, blunt at base. Pappus of many or few, slender, hair-like bristles, the marginal flowers sometimes without pappus. Involucre very usually 1-seriate (often bracteolate at base). (Gen. 107-119.)
1. Heads discoid.
- Homogamous* ; all the flowers perfect, 5-toothed.
- Involucral scales 5, winged or crested at back . . . . . 111. LOPHOLENA.
- Involucral scales neither winged nor crested.
- Style-branches truncate . . . . . 117. SENECIO.
- Style-branches minutely cone-topped.
- Achenes flattened or winged . . . . . 110. CINERARIA.
- Achenes not flattened.
- Pappus in several rows . . . . . 113. KLEINIA.
- Pappus 1-seriate . . . . . 112. CACALIA.
- Heterogamous* or *Heteromonœcious* ; the marginal flowers filiform, female.
- Shrubby or perennial. Pappus copious.
- Disk-flowers fertile. Leaves fleshy, thick . . . 113. KLEINIA.
- Disk-flowers sterile. Leaves expanded, glabrous . . . . . 114. DORIA.
- Annual. Pappus very scanty . . . . . 107. STILPNOGYNE.
2. Heads radiate.
- Achenes flattened or winged . . . . . 110. CINERARIA.
- Achenes terete or angular.
- Pappus copious, in many rows.
- Disk-flowers fertile.



- Involucral scales separate, often bracteolate . . . . . 117. *SENECIO*.  
 Involucral scales connate, not bracteolate, valvate . . . . . 118. *EURYOPS*.  
 Disk-flowers sterile.  
 Pappus of very slender, nodulose, caducous, jointed bristles . . . . . 119. *RUCKERIA*.  
 Pappus of straight, rigid, persistent bristles . . . . . 115. *OTHONNA*.  
 Pappus of few bristles, 1-seriate (sometimes 0 in disk-flowers).  
 Disk-flowers fertile.  
 Pappus in disk-flowers of several, in a ray of few bristles . . . . . 109. *MESOGRAMMA*.  
 Pappus of 4-5 curved, barbed bristles . . . . . 108. *OLIGOTHRIX*.  
 Disk-flowers sterile, without pappus . . . . . 116. *GYMNODISCUS*.

Subtribe 6. *CALENDULÆ*. Leaves rarely opposite. Heads radiate, heteromonœcious, the ray-flowers fertile, the disk-flowers male, with abortive simple styles; or rarely (in *Dimorphotheca*) some or all of the disk-flowers fertile. Anthers acute or cuspidate at base, or very minutely tailed. Pappus 0. (Gen. 120-124.)

Achenes quite beakless.

Involucre 1-seriate.

Marginal achenes 3-cornered, either smooth, tubercled, or sharply toothed on the angles . . . . . 120. *DIMORPHOTHECA*.

Marginal achenes covered with thorny points . . . . . 124. *XENISMIA*.

Involucre in 2-3 rows. Marginal achenes nut-like, thick-shelled, smooth or wrinkled, 3-cornered or 3-winged . . . . . 123. *OSTEOSPERMUM*.

Achenes produced into a beak.

Achenes broadly 3-winged . . . . . 121. *TRIPTERIS*.

Achenes 3-cornered, wingless or nearly so . . . . . 122. *OLIGOCARPUS*.

#### TRIBE 5. *CYNARÆÆ*. (Gen. 125-146.)

Subtribe 1. *ARCTOTIDÆ*. Heads commonly radiate, rarely homogamous and discoid; rays female or neuter, ligulate. Anthers minutely tailed. Achenes beakless, turbinate, with a terminal flattened disk, often villous. Pappus 0, or of broad or narrow, membranous scales, or (in *Heterolepis*) of barbed bristles. (Gen. 125-140.)

1. *ARCTOTÆ*. Involucral scales unarmed, separate, the outer herbaceous, inner membrane-edged, obtuse. Heads radiate.

Rays female, producing achenes.

Achenes with 2 collateral cavities at back.

Pappus of 8 or more membranous scales . . . . . 125. *ARCTOTIS*.

Pappus 0, or of 4-5 minute squamules . . . . . 126. *VENIDIUM*.

Achenes solid (no dorsal cavities).

Pappus of several very delicate, narrow scales.

Filaments of stamens scabrous . . . . . 127. *HAPLOCARPHA*.

Filaments of stamens smooth . . . . . 128. *LANDTIA*.

- Pappus of 15–20 rigid barbed bristles 132. *HETEROLEPIS*.  
 Rays neuter, never having achenes.  
 Pappus 0. Achenes 4-sided . . . . . 129. *ARCTOTHECA*.  
 Pappus of several scales, hidden among  
 the long silky hairs that clothe the  
 achene . . . . . 130. *CRYPTOSTEMMA*.  
 Pappus crown-like, minute, crenate.  
 Achenes tomentose . . . . . 131. *MICROSTEPHIUM*.

2. *GORTERIEÆ*. Involucral scales, at least the  
 outer and medial, pungent, and mostly  
 spinous at the sides, more or less con-  
 crete. Heads either radiate or discoid;  
 rays neuter.

- Involucral scales concrete into a cup, toothed  
 or lobed round the apex.  
 Achenes subglabrous. Pappus crown-  
 like . . . . . 133. *GORTERIA*.  
 Achenes villous. Pappus of thin toothed  
 scales . . . . . 134. *GAZANIA*.  
 Involucral scales in 2 or many rows, con-  
 crete at base only.  
 Pappus 0. Achenes glabrous . . . . . 135. *CULLUMIA*.  
 Pappus crown-like, crenate. Achenes  
 glabrous . . . . . 137. *STEPHANOCOMA*.  
 Pappus splitting into short bristles.  
 Achenes woolly . . . . . 136. *HIRPICIUM*.  
 Pappus of many flat, separate scales.  
 Involucral scales imbricate in many  
 rows.  
 Pappus-scales obtuse, denticulate . 138. *STOBÆA*.  
 Pappus-scales acute or taper-  
 pointed . . . . . 139. *BERKELEYA*.  
 Involucral scales in 2 rows. Pappus  
 scales fimbriato-plumose . . . . . 140. *DIDELTA*.

Subtribe 2. *MUTISIEÆ*. Heads commonly radiate, rarely discoid. In-  
 volucres imbricate. Receptacles nude or fimbriiferous. Corolla of disk  
 or ray, or of both, very generally (not always) 2-labiate, or irregularly cleft.  
 Anthers rigid, in all the Cape genera with long tails. Pollen mostly  
 smooth. (Gen. 141–146.)

- \* Shrubs, or dwarf woody plants, none herbaceous.  
 Leaves very thick and leathery, entire, penni-  
 nerved, woolly beneath. Stem dwarf or  
 tall . . . . . 141. *OLDENBURGIA*.  
 Leaves membranous. Small shrubs or shrub-  
 lets.  
 Pappus of many shortly plumose bristles.  
 Rays female. Shrubs . . . . . 142. *PRINTZIA*.  
 Rays neuter or 0. Half-shrubs . . . . . 143. *DICOMA*.  
 Pappus 0. Receptacles fimbriate . . . . . 146. *ARROWSMITHIA*.  
 \*\* Stemless herbs. Leaves radical, petioled.  
 Scapes 1-headed.  
 Heads radiate . . . . . 144. *GERBERA*.  
 Heads discoid . . . . . 145. *PERDICIUM*.

## TRIBE 6. CICHORACEÆ. (Gen. 147-154.)

Pappus plumose.

Involucre imbricate; receptacles scaly; central  
 achenes beaked . . . . . 147. *HYPOCHERIS*.

Involucre 1-seriate; receptacle nude; all the  
 achenes beaked . . . . . 148. *UROSPERMUM*.

Pappus bristle- or hair-shaped.

Achenes with a long beak.

Achenes flattened, smooth or striate. Stem  
 branched . . . . . 149. *LACTUCA*.

Achenes oblong, with hard sharp points at  
 the apex. Leaves all radical. Stem scape-  
 like, 1-headed . . . . . 150. *TARAXACUM*.

Achenes oblong, compressed, the outer with a  
 short, inner with a long beak. Leaves ra-  
 dical. Stem branched . . . . . 154. *ANISORAMPHOS*.

Achenes beakless or very shortly beaked.

Achenes 4-5-angled, slightly beaked. Stems  
 trailing, bearing tufted leaves and axillary  
 flower-heads . . . . . 151. *MICRORHYNCHUS*.

Achenes compressed, beakless. Pappus very  
 soft and white. Branching herbs . . . . . 152. *SONCHUS*.

Achenes 5-angled, beakless. Pappus rigid,  
 discoloured. Branching herbs. Leaves  
 chiefly radical . . . . . 153. *HIERACIUM*.

## TRIBE 1. VERNONIÆ. (Gen. 1-6.)

1. *ETHULIA*, Cass.

Heads many-flowered, homogamous. Involucre imbricate; scales herbaceous, acute. Receptacle nude. Corolla bell-shaped, 5-fid. Anthers short, included. Style shortly exserted, its branches bristly. Achenes obconic, 4-angled, 4-ribbed, glabrous, truncate, and 4-5-angled at the summit. Pappus an entire, thickened rim.—*Fl. Cap.* iii. p. 47.

Branching, weed-like herbs of hot countries.—*E. conyzoides*, Linn., a common tropical plant, occurs at Natal.

2. *LITOGYNE*, Harv.

Heads heteromonœcious, many-flowered; central flower male, funnel-shaped, 5-toothed; marginal female, in many rows, filiform, 3-toothed. Involucre imbricate, the scales acute. Receptacle nude, depressed. Pappus 0.—Male: Anthers linear, partly exserted, acute at base. Style simple, much exserted, the exserted portion hispid all round. Ovary abortive.—Female: Anthers 0. Style exserted, deeply 2-fid, the arms glabrous, blunt, spreading. Ovary glabrous, minute, ovuliferous. Achenes unknown.—*Fl. Cap.* iii. p. 48; *Thes. Cap.* t. 155.

Much-branched, small, rigid plants, with entire or denticled, alternate

leaves, decurrent as narrow wings along the stem. Heads small, corymbose or tufted.—2 species, from the Northern frontier.

### 3. VERNONIA, Schreb.

Heads few- or many-flowered, homogamous. Involucre imbricate, shorter than the flower; scales not pungent. Receptacle nude or honeycombed. Corolla deeply 5-fid, with narrow lobes. Filaments smooth; anthers sagittate. Achenes glabrous or silky, striate or ribbed. Pappus 2-seriate, the inner of many, long, serrate bristles, outer of very narrow, short scales; rarely both series subequal.—*Fl. Cap.* iii. p. 48; *Thes. Cap.* t. 156, 157.

A vast tropical and subtropical genus, various in habit. Leaves often gland-dotted. Heads corymbose or solitary; flowers rosy-purple or white.—15 South African species, all Eastern or beyond the Eastern frontier.

### 4. HOLOPHYLLUM, DC.

Heads few-flowered, homogamous. Involucre ovate-oblong, closely imbricate, the broad, rigid scales spinous-mucronate. Receptacle narrow, fimbriiferous. Corolla glabrous, tubular, deeply 5-cleft; lobes linear. Filaments smooth; anthers linear, sagittate. Achenes thick, subtrigonus, densely hairy, slightly narrowed under the pappus. Pappus in many rows, persistent, scabrous, the outer bristle-shaped, the inner subulate-acuminate.—*Fl. Cap.* iii. p. 53.

Rigid shrubs, with pungent, linear or subulate leaves, and sessile, axillary or terminal heads.—2 species. Western and North-Eastern districts in dry places.

### 5. PLATYCARPHA, Less.

Heads densely crowded, sessile, many-flowered, homogamous. Involucral scales in many rows, lanceolate, scarious, pungent-mucronate, the inner narrow, resembling paleæ. Corolla with a long, slender, hispid tube, and 5-parted limb; the lobes linear, with recurved, gland-tipped points. Filaments smooth; anthers linear, obtuse, sagittate. Achenes glabrous, oblong, bluntly 5-angled. Pappus persistent, of 7-9 white, linear-acuminate, entire, spreading scales.—*Fl. Cap.* iii. p. 54.

*P. glomerata*, the only species, is a stemless perennial, with many radical, petioled, pinnate-parted leaves lying like a star on the ground. Heads crowded over the crown of the root; corolla purple.—Found in Uitenhage, by the Zwartkops river, in salt ground.

### 6. CORYMBIUM, Linn.

Heads 1-flowered. Involucre cylindrical, of 2 opposite, channelled scales, one clasping the other, with 2-3 very small,

outer bracts at base. Corolla salver-shaped, deeply 5-cleft. Anthers included, simple at base. Achenes tapering at base, silky. Pappus short, crown-like, irregularly cleft or torn.—*Fl. Cap.* iii. p. 55.

Nearly stemless plants, with a thick, softly-silky rootstock. Leaves radical, linear, parallel-nerved, rigid. Flower-stems nearly nude, with a few clasping, scale-like leaves, corymbose at summit. Corymbs close or loose; flowers pink or white, rarely yellow.—7 species, dispersed.

## TRIBE 2. EUPATORIACEÆ. (Gen. 7–10.)

### 7. ANISOCHÆTA, DC.

Heads many-flowered, homogamous. Involucre ovate, imbricate, its scales lanceolate, appressed, shorter than disk. Receptacle nude. Corolla tubular, deeply 5-cleft. Anthers sagittate. Style shortly exserted; branches cylindrical, obtuse, nearly smooth. Achenes oblong, striate, scarcely downy. Pappus of 3–5, narrow-subulate, unequal scales.—*Fl. Cap.* iii. p. 57.

*A. mikanioides*, DC., the only species, is a half-climbing or scrambling plant, found near Natal. Leaves alternate, petioled, ovate, 3–5-nerved at base, coarsely toothed, at length nearly glabrous. Panicle terminal, with widely-spreading branches, many-headed.

### 8. AGERATUM, Linn.

Heads many-flowered, subglobose. Involucre loosely imbricate; scales acuminate. Receptacle nude. Corolla tubular, 5-fid. Achenes with a basal callus, 5-angled, narrowed at base. Pappus of 5–10, lacerate or pectinate scales.—*Fl. Cap.* iii. p. 57.

Herbs, chiefly American.—*A. conyzoides*, Linn., a common tropical plant, often cultivated, occurs about Natal. Leaves ovate, rhomboid or cordate, on longish petioles; heads corymbose; flowers lavender blue or white.

### 9. ADENOSTEMMA, Forst.

Heads many-flowered. Receptacle flat, nude, honeycombed. Involucral scales short, in a single or double row, connate at base, oblong, at length reflexed. Corolla funnel-shaped, 5-toothed, villous externally. Style-arms much exserted, dilated. Achenes oblong, bluntly angular, crowned with 3–5 short, rigid, spreading, gland-tipped bristles.—*Fl. Cap.* iii. p. 58.

Herbs of hot countries. Leaves opposite, petioled, toothed, 3-nerved at base. Heads panicled, pedicelled; flowers white.—2 Cape species, from Caffraria and Natal.

### 10. MIKANIA, Willd.

Heads 4-flowered. Receptacle nude. Involucre 4-leaved,



bracteolate. Corolla with a short tube and bell-shaped, 5-cleft limb. Achenes angular. Pappus of many rough bristles.—*Fl. Cap.* iii. p. 58.

Mostly climbing herbs or shrubs of hot countries, chiefly American. Leaves opposite, petioled, mostly cordate or sagittate. Heads corymbose; corolla pale.—2 Cape species, both Eastern.

### TRIBE 3. ASTEROIDEÆ. (Gen. 11–38.)

#### SUBTRIBE ASTERÆ. (Gen. 11–24.)

#### 11. **ALCIOPE**, DC.

Heads many-flowered, radiate; ray-flowers ligulate, 1-seriate, female; disk-flowers 5-cleft, complete. Receptacle nude. Involucral scales imbricate, linear, appressed. Style of disk-flowers deeply 2-fid, its arms linear, divergent, semiterete, obtuse, dorsally puberulous. Achenes linear-oblong, angular, subcompressed, pubescent. Pappus of slender, rough bristles in many rows, deciduous.—*Fl. Cap.* iii. p. 60.

Branching, erect, South African undershrubs. Stems clothed with close, white wool. Leaves alternate, petioled, entire or toothed, coriaceous, woolly beneath. Heads large, ending long branches.—2 species, both Western.

#### 12. **AMELLUS**, Cass.

Heads many-flowered, mostly radiate; rays 1-seriate, female and fertile; disk-flowers 5-toothed. Receptacle bearing paleæ between the flowers. Involucral scales imbricate, rigid, the inner like the paleæ. Achenes wedge-shaped, compressed, those of the ray somewhat 4-angled, of the disk smooth, rough-edged. Pappus of ray of a few, short, unequal scales; of disk double, the outer similar to that of the ray, the inner of 4–5 scabrous, deciduous bristles.—*Fl. Cap.* iii. p. 61.

Small South African annuals or rigid perennials. Lower leaves opposite, upper alternate, oblong, entire or few-toothed. Heads terminal; rays blue; disk yellow.—8 species, dispersed.

#### 13. **MAIREA**, DC.

Heads many-flowered, radiate; rays female and fertile; disk-flowers 5-toothed, fertile or sterile. Receptacles nude. Involucre subimbricate. Anthers simple at base. Achenes plano-compressed. Pappus in 1 row, uniform, of several feathered (plumose) bristles.—*Fl. Cap.* iii. p. 64.

South African perennials or small shrubs, of various habit. Leaves alternate. Peduncle 1-headed or rarely corymbose. Disk yellow; rays purple blue or white; very rarely yellow.—10 species, dispersed.

14. **GYMNOSTEPHIUM**, Less.

Heads many-flowered, radiate ; rays female, in 1 row ; disk-flowers 5-toothed, sterile, with 2-fid styles, but abortive ovaries. Involucral scales imbricate. Achenes of ray-flowers plano-compressed, rib-margined, beakless, glandular on face ; of the disk linear, empty. Pappus caducous, of few setæ, either shortly feathery or barbato-serrate ; ray-flowers either without pappus or with 1-2 bristles.—*Fl. Cap.* iii. p. 67.

Undershrubs, with slender, rod-like, leafy branches. Leaves alternate, linear or subulate, entire, smooth or ciliate. Heads peduncled, solitary or corymbose. Rays blue ; disk yellow.—6 species, none east of Swellendam ?

15 ? **ANAGLYPHA**, DC.

Heads many-flowered, radiate ; rays 1-seriate, female ; disk-flowers 5-toothed, perfect. Involucral scales 2-seriate, equal, acuminate, longer than the disk. Receptacle nude, honey-combed. Tube of corolla hairy. Achenes obovate, downy, without pappus.—*Fl. Cap.* iii. p. 68.

*A. aspera*, DC., a little-known plant, was found by Drege between the Coega and Zwartkops rivers. It is said to resemble *Mairea taxifolia* in aspect.

16. **CHARIEIS**, Cass.

Heads many-flowered, radiate ; rays female, in 1 row ; disk-flowers hermaphrodite, 5-toothed, tubular-bell-shaped. Receptacle honeycombed. Involucral scales 2-seriate, the outer sharply keeled, inner membrane-edged. Achenes obovate, compressed, with a thick rim ; those of the ray frequently empty and always without pappus. Pappus of disk-flowers of several, feathered bristles.—*Fl. Cap.* iii. p. 69.

A small, hairy annual. Lower leaves opposite, upper alternate, oblong-lanceolate. Peduncle long, 1-headed, glandular ; rays blue ; disk blue or yellow.—Western districts.

17. **ASTER**, Linn.

Heads many-flowered, radiate ; rays female, in 1 row ; disk flowers 5-toothed, perfect, rarely sterile. Receptacle nude or honeycombed. Involucral scales imbricate, in few or many rows. Achenes compressed. Pappus of many serrulate, caducous or subpersistent, uniform bristles, 1-seriate or pluri-seriate.—*Fl. Cap.* iii. p. 69 ; *Thes. Cap.* t. 154.

A vast cosmopolitan genus, much diversified in aspect.—46 Cape species, either annual, perennial or shrubby, dispersed. Leaves rarely petioled, often small. Heads terminal, solitary. Rays blue white or pink, never yellow.

18. **DIPLOPAPPUS**, DC.

Heads many-flowered, radiate ; rays female, in 1 row ; disk-flowers 5-toothed, perfect. Receptacle flat, somewhat honey-combed. Involucre imbricate. Achenes compressed. Pappus double, the outer of short, inner of long, rough bristles.—*Fl. Cap.* iii. p. 84.

Much-branched shrubs or rigid simple stemmed herbs, differing from *Aster* in the pappus.—5 Cape species, dispersed.

19. **ERIGERON**, Linn.

Heads many-flowered, heterochromous, radiate ; rays female, in many rows, linear, equalling the disk (or longer) ; disk-flowers tubular, 5-toothed, either all perfect, or the outer female, or all abortive. Receptacle nude, honeycombed, or fimbriiferous. Achenes compressed, beakless. Pappus bristle-shaped, rough, in 1 row.—*Fl. Cap.* iii. p. 86.

A large, chiefly Northern genus. *E. Canadense*, Linn., a species of American origin, now universally dispersed, is naturalized in the Eastern districts and at Natal. Root annual ; stem much-branched ; leaves linear-lanceolate, ciliate ; heads small, very many, in panicles ; rays very narrow, scarcely longer than the involucre.

20. **NIDORELLA**, Cass.

Heads many-flowered, homochromous, radiate ; rays female, very shortly ligulate or 2-labiate, in 1, 2 or several rows ; disk-flowers 5-fid, perfect, the central sometimes sterile. Involucre imbricate. Receptacle honeycombed. Anthers without tails. Achenes oblong, terete or subcompressed, mostly downy. Pappus in 1 row, of rough bristles, slightly connate at base.—*Fl. Cap.* iii. p. 86.

Herbs or undershrubs, chiefly South African. Leaves alternate, toothed or entire. Heads corymbose, rarely solitary ; disk and ray-flowers yellow.—16 species, dispersed.

21. **GARULEUM**, Cass.

Heads many-flowered, monœcious, radiate ; ray-flowers ligulate, female ; disk-flowers 5-toothed, male, with abortive ovaries. Receptacle convex, nude. Involucral scales 2-seriate. Style of disk-flowers with divergent arms, hairy outside, glandular at the margins inside. Achenes of ray obovate-oblong, 3-4-ribbed, beakless, roughish ; of disk flat, smooth, empty. Pappus 0.—*Fl. Cap.* iii. p. 92.

South African undershrubs, with alternate, pinnatifid and toothed leaves. Heads peduncled, solitary ; rays blue ; disk yellow.—3 species, dispersed.

22. **FRESENIA**, DC.

Heads several-flowered, discoid. Involucral scales imbricate, linear, submembranous at margin, with 1-3 dorsal glands. Receptacle areolate, narrow. Corolla tubular, glabrous, 5-toothed, not wider at the throat. Anthers without tails. Achenes compressed, beakless, silky. Pappus double, the outer of short, narrow scales, inner of long, rough bristles.—*Fl. Cap.* iii. p. 92.

Glabrous halfshrubs, with linear, opposite or alternate, entire leaves, and 1-headed peduncles. Flowers pale yellow.—2 species, both Western.

23. **CHRYSOCOMA**, Cass.

Heads many-flowered, discoid. Receptacle somewhat honeycombed. Involucre campanulate, shorter than the flower, imbricate, of oblong-lanceolate scales. Achenes flattened, beakless, hispidulous. Pappus in 1 row, of slender, rough bristles.—*Fl. Cap.* iii. p. 93.

South African small shrubs or rarely herbs, with linear, rarely pinnatifid leaves. Heads solitary or rarely corymbose, bright yellow.—9 species, dispersed.

24. **PTERONIA**, Linn.

Heads discoid, homogamous, many-flowered, rarely 3-1-flowered. Receptacle honeycombed; cells shallow or fringed. Involucre imbricated, in many rows. Achenes compressed or top-shaped, glabrous or villous, rarely shortly beaked. Pappus in many rows, of thickish, straight and rigid, closely-barbed bristles, often concrete at base.—*Fl. Cap.* iii. p. 95.

A large Cape genus of small, dry or glutinous shrubs. Leaves opposite or rarely alternate, mostly entire, often ciliate. Heads solitary or corymbose; flowers yellow, rarely purple.—51 species, dispersed, the majority Western and North-Western.

## SUBTRIBE 2. BACCHARIDÆ. (Gen. 25-28.)

25. **LEPTOTHAMNUS**, DC.

Heads many-flowered, heterogamous; marginal flowers filiform, truncate or 2-dentate, female, in 1 row; disk-flowers tubular, perfect, 5-toothed. Receptacle flat, nude, somewhat honeycombed. Involucral scales imbricate, acuminate, in few rows. Pappus bristle-shaped, deciduous, of the ray 1-seriate, of the disk more copious. Achenes compressed, silky.—*Fl. Cap.* iii. p. 111.

Slender undershrubs, with scattered, linear-subulate, rigidly-ciliate leaves, and terminal, 1-headed peduncles. Flowers yellow, tawny red above.—2 species, both Eastern.

26. **CONYZA**, Less.

Heads many-flowered, heterogamous; marginal flowers female, in many rows, with very slender, filiform, truncate or 2-3-toothed corollas; central flowers few, male, 5-toothed. Receptacle flat or convex, nude or fimbriiferous. Involucral scales in many rows. Anthers without tails. Achenes flat, mostly glabrous. Pappus 1-seriate, of slender, scarcely rough bristles.—*Fl. Cap.* iii. p. 111.

Herbs or halfshrubs. Leaves various, often toothed or incised. Heads peduncled corymbose or paniced. Flowers yellow. Pappus reddish.—9 Cape species, dispersed.

27. **DICHROCEPHALA**, DC.

Heads many-flowered, heterogamous, discoid; marginal flowers female, in many rows, slender, filiform, 3-4-toothed; central few, male, bell-shaped, 4-toothed. Receptacle nude, conical. Involucre expanded, nearly 1-seriate; scales ovate, subequal. Style included. Achenes compressed, beakless, the marginal without pappus, central each with 1-2 bristles.—*Fl. Cap.* iii. p. 114.

Annual weeds of warm countries, with alternate, toothed or lyrate leaves, and globose, small, racemose or paniced heads.—*D. latifolia*, DC., occurs in the Eastern district and at Natal.

28. **SPHÆRANTHUS**, Vaill.

Heads crowded into a globose glomerule (or compound head), surrounded by a common involucre; each partial head sessile in the axil of a bract, on a convex, common receptacle. Partial heads few-flowered, monœcious, all the flowers tubular; female filiform, 3-toothed; male swollen, 5-toothed. Partial receptacle nude. Partial involucre of several, close-pressed, imbricate scales. Anthers tailless. Pappus 0.—*Fl. Cap.* iii. p. 115.

Herbs of hot countries. Leaves decurrent, serrate or entire.—*S. peduncularis*, DC., occurs in Caffraria and at Natal. Flowers purplish.

SUBTRIBE 3. **TARCHONANTHÆ**. (Gen. 29-30.)29. **BRACHYLÆNA**, R. Br.

Heads many-flowered, diœcious. Receptacle nude. Involucral scales imbricated, dry, shorter than the flowers. Corolla tubular, unequally 5-toothed.—Male: Anthers tailed at base, connate, exserted. Style filiform, simple. Ovary hispid, abortive, with few pappus-bristles.—Female: Anthers abortive, separate. Style 2-fid, the arms short and broad. Achenes



glandular-pubescent. Pappus double, of rough bristles.—*Fl. Cap.* iii. p. 115.

Resinous shrubs or small trees. Leaves alternate, coriaceous, shortly petioled, entire or toothed, glabrate above, often tomentose beneath. Heads in branching racemes or panicles; flowers yellow.—5 or 6 species, dispersed.

### 30. TARCHONANTHUS, Linn.

Heads diœcious, several- or few-flowered, or rarely 1-flowered. Involucre of male heads of 5 scales, connate to their middle; of the female, of many separate scales, in a double row. Receptacle hairy. Corolla tubular-campanulate, 5-toothed, hairy and viscid without.—Male: Anthers exserted, connate, with long, bristle-shaped tails. Ovary abortive. Nectary (or epigynous disk) of large size, callous, hollow at top; style filiform.—Female: Stamens abortive. Nectary 0. Style exserted, 2-fid, the lobes revolute. Achene very woolly, without pappus.—*Fl. Cap.* iii. p. 117.

Resinous shrubs, as in the last genus, from which this is easily known by the want of pappus and the woolly achenes.—3 species, dispersed.

#### SUBTRIBE 4. INULÆ. (Gen. 31–38.)

### 31. DENEKIA, Thunb.

Heads many-flowered, heterogamous; marginal flowers in several rows, female equalling the disk, with 2-labiate corollas, the lips oval, equal, entire; disk-flowers funnel-shaped, 5-fid, sterile. Receptacle nude, flat. Involucre 2-seriate. Anthers tailed. Style of disk-flower 2-fid, with flattened arms. Achenes oblong, sessile, beakless. Pappus of the marginal flower 0; of the disk-flowers, a single, slender, palmatifid scale, and a few small simple scales.—*Fl. Cap.* iii. p. 118.

Herbs, with alternate, half-clasping, oblong or lanceolate, dentate leaves, and densely corymbulose or clustered small heads; flowers white.—2 species, both Eastern.

### 32. BLUMEA, DC.

Heads many-flowered, heterogamous; marginal flowers in many rows, female, very slender, filiform; disk-flowers few, hermaphrodite, 5-toothed, scarcely dilated upwards. Receptacle flat, mostly nude. Involucre in few rows, subimbricate, the scales linear, acuminate. Anthers with slender tails. Achenes terete. Pappus 1-seriate, of many roughish bristles.—*Fl. Cap.* iii. p. 119.

Herbs or halfshrubs, chiefly Asiatic, resembling *Conyzæ*. Leaves alternate, mostly villous. Heads panicled or corymbose; flowers yellow or purplish.—4 South African species, all but one beyond the Eastern frontier.

33. **INULA**, Gærtn.

Heads many-flowered, heterogamous; ray-flowers in 1 row, female, mostly ligulate, rarely subtubular, 5-fid; disk-flowers perfect, tubular, 5-toothed. Involucre imbricate. Receptacle nude. Anthers tailed. Achenes subterete or 4-angled. Pappus 1-seriate, of rough bristles.—*Fl. Cap.* iii. p. 121.

A large genus, chiefly European and Asiatic.—*I. Africana*, Lam., a little-known plant, is the only species.

34. **PULICARIA**, Cass.

Heads many-flowered, heterogamous; ray-flowers female, 1-seriate, ligulate (in *P. Capensis* very short); disk-flowers tubular, 5-toothed. Involucre laxly imbricate, in few rows; scales linear. Receptacle nude, areolate, flattish. Achenes beakless, downy, terete. Pappus in 2 rows, the outer very short, crown-like, toothed; inner of 10–20 rough bristles.—*Fl. Cap.* iii. p. 121.

Herbs, chiefly European, erect, villous, branched. Cauline leaves clasping at base, entire or toothed. Peduncles 1-headed; flowers yellow.—*P. Capensis*, DC., found throughout the colony, varies in being thinly or densely pubescent.

35. **PEGOLETTIA**, Cass.

Heads many-flowered, homogamous. Involucre imbricate in few rows, shorter than the flowers; scales acute. Receptacle nude, dotted, flat. Corolla tubular, 5-fid, regular or subirregular. Anthers 2-tailed at base. Achenes cylindrical, rib striate, beakless. Pappus in 2 or 3 rows, the inner of long, rigid, straight, serrate (rarely plumose) bristles; the outer much shorter, either of flat, entire or toothed, unequal scales, or of bristles nearly similar to those of the inner pappus.—*Fl. Cap.* iii. p. 122.

Small, rigid halfshrubs, resembling *Pteronia*. Leaves alternate, dotted, elliptical or linear. Heads ending the branches, yellow.—6 South African species, dispersed.

36. **CYPSELODONTIA**, DC.

Heads many-flowered; ray-flowers 1-seriate, ligulate, neuter; disk-flowers deeply 5-fid, hermaphrodite. Involucre imbricate in several rows, the scales linear, outer squarrose. Receptacle honeycombed, the cells toothed. Filaments short, hairy; anthers with a prolonged point, tailed. Style of the disk-flower with obtuse, nearly cohering lobes, downy at back near the summit. Ray-achenes abortive, glabrous, with a basal tuft of hair; of disk, obovate, very villous. Pappus with thick, white,

toothed bristles, few in the ray-flower, copious in the disk-flower.—*Fl. Cap.* iii. p. 123.

*C. Eckloniana*, DC., is a much-branched undershrub, with alternate, ob-ovate-oblong, obtuse, entire leaves, white underneath, glabrous and 1-nerved above. Heads solitary, terminal. Corolla yellow.—Grows in Uitenhage. Unknown to me.

### 37. MINUROTHAMNUS, DC.

Heads many-flowered; ray-flowers ligulate, female, in 1 row; disk-flowers tubular, 5-toothed, hermaphrodite. Involucral scales 2-seriate, the outer shorter, acuminate, inner longer, obtuse, membrane-edged. Filaments glabrous; anthers shortly tailed. Style 2-fid, with spreading branches. Achenes obovate?, woolly. Pappus in 2 rows, of about 20 straight, yellow, toothed bristles, the outer 10 shorter, the inner more rigid.—*Fl. Cap.* iii. p. 124.

*M. phagnaloides*, DC., found by Ecklon in Caledon, is said to have the habit of *Cypselodontia*. Unknown to me.

### 38. GEIGERIA, Griessl.

Heads radiate; ray-flowers 1-seriate, female, ligulate; disk-flowers tubular, perfect, 5-lobed, the lobes lanceolate, erect, externally glandular-scabrid. Involucre closely imbricate, the outer scales mostly leaf-tipped, the inner horny, acute or acuminate. Receptacle convex, piloso- or paleaceo-fimbriiferous. Anthers tailed. Style-branches of the disk-flowers linear-lanceolate, flattened. Achenes subtrigonous, hairy or pilose, beakless, narrowed to the base. Pappus 2-seriate, of 10–16 scales, either all aristate or the outer ones blunt, or all of them toothed.—*Fl. Cap.* iii. p. 124.

Glabrous or scabrous undershrubs, with rigid leafy stems or nearly stemless. Leaves alternate, linear or subulate, 1-nerved, quite entire or toothed, gland-dotted on each side of the rib. Heads sessile, either terminal or in the forks, or pseudo-lateral on lengthening branches. Flowers yellow.—9 species (1 undescribed), either Eastern or near or beyond the Eastern and North-Eastern frontiers.

## TRIBE 4. SENECONIDÆ.

### SUBTRIBE 1. HELIANTHÆ. (Gen. 39–44.)

### 39. ECLIPTA, Linn.

Heads radiate; ray-flowers in few rows, female, short and narrow-ligulate; disk-flowers tubular, 4-toothed, hermaphrodite. Involucre 2-seriate, of 10–12 ovato-lanceolate, acuminate scales. Receptacle plano-convex, with linear-filiform paleæ, ciliate at the apex, and equalling the achenes. Style-arms in the

disk-flowers linear, flattened, obtuse. Achenes of ray 3-cornered, of disk flat, without pappus, either pointless or crowned with 1-3 minute teeth, the younger downy.—*Fl. Cap.* iii. p. 131.

Tropical or subtropical herbs, scabrous or hairy. Leaves opposite, entire or serrate, penninerved. Peduncles axillary, 1-headed.—*E. erecta*, Linn., a common tropical weed, grows at Natal.

#### 40. SIEGESBECKIA, Linn.

Heads few-flowered, radiate; ray-flowers 1-seriate, female, ligulate or irregular; disk-flowers 3-5-toothed, hermaphrodite. Involucre 2-seriate, the scales covered with gland-headed bristles; the 5 outer linear-spathulate, spreading; the inner half-clasping the ray-flowers. Receptacle flat, bearing oval-oblong paleæ wrapping round the achenes. Style-arms in the disk-flowers short, somewhat flattened, very obtuse. Achenes obovate-oblong, somewhat 4-angled, arching inwards, without pappus.—*Fl. Cap.* iii. p. 132.

*S. orientalis*, Linn., a common tropical annual weed, occurs near Natal. Leaves opposite, ovate, tapering at base, coarsely toothed. Heads small, yellow.

#### 41. WEDELIA, Jacq.

Heads many-flowered, radiate; ray-flowers ligulate, female, in 1 row; disk-flowers bisexual, tubular, 5-toothed. Involucre in 2-3 rows, the outer scales leaf-like, inner membranous. Receptacle somewhat convex, covered with paleæ. Style-arms in the disk-flowers tipped with a short cone. Achenes obovate or compressed, beakless, with a crown-like or cup-like, often substipitate pappus, consisting of concrete scales.—*Fl. Cap.* iii. p. 132.

Chiefly American undershrubs and herbs, with opposite, petioled, serrate or 3-fid leaves, and solitary, terminal, 1-headed pedicels. Flowers yellow.—*W. Natalensis*, Sond., occurs at Natal.

#### 42. BIDENS, Linn.

Heads radiate or discoid; ray-flowers ligulate, neuter; disk-flowers bisexual, 5-toothed. Involucral scales in a double row. Receptacle flattish, bearing paleæ. Style-arms tipped with a short cone. Achenes more or less compressed, acuminate, tapering into a beak, tipped with 2-5 rigid, retrorsely-hispid, scabrous bristles.—*Fl. Cap.* iii. p. 133.

A large genus, chiefly American. Stems herbaceous. Leaves opposite, often pinnate-parted and cut. Rays yellow or white.—*B. pilosa*, Linn., a tropical weed, occurs in waste ground in the Eastern district and at Natal.

43. **LIPOTRICHE**, R. Br.

Heads radiate; ray-flowers in 1 row, female, broadly ligulate, 3-toothed, externally pubescent; disk-flowers bisexual, tubular, 5-toothed. Involucre 2-3-seriate, loosely imbricate, the scales lanceolate, leafy. Receptacle convex, covered with flattish, acuminate leafy paleæ. Style-arms of the disk-flowers tipped with a hispid cone. Anthers dark-coloured. Achenes turbinate-prismatic, 3-4-angled, those of the disk subcompressed. Pappus of 8-10, short, rigid, unequal, deciduous, rough bristles.—*Fl. Cap.* iii. p. 133.

*L. Brownii*, DC., is a coarse-growing, scabrous herb, with the aspect of *Wedelia*. Leaves opposite, long-petioled, the lower 3-lobed, upper hastate-lanceolate, 3-nerved, serrate. Peduncles 1-headed; flowers bright yellow.—Caffraria and Natal.

44. **SPILANTHES**, Jacq.

Heads many-flowered, radiate or discoid; rays ligulate, female, often short, 1-seriate; disk-flowers tubular, 4-5-toothed. Involucral scales in 2 rows, appressed, shorter than the disk, the outer scales green, inner submembranous, folded. Receptacle convex, covered with membranous paleæ, enveloping the flowers. Style-arms of disk-flowers truncate and pencilled. Anthers blackish. Achenes of disk compressed, beakless, often ciliate at the sides or naked; of the ray, 3-cornered or subcompressed. Pappus 0.—*Fl. Cap.* iii. p. 133.

Annuals or perennials, mostly tropical. Leaves opposite, petioled, or ovate or ovato-lanceolate, coarsely toothed. Peduncles 1-headed; flowers yellow.—*S. Africana*, DC., grows near Natal.

## SUBTRIBE 2. HELENIEÆ. (Gen. 45-49.)

45. **CADISCUS**, E. Mey.

Heads radiate; ray-flowers broadly ligulate, female, in one row; disk-flowers bell-shaped, 5-toothed, fertile or the inner sterile. Involucral scales 8-10, in a single row, concrete into an 8-10-toothed, cup-like involucre. Receptacle honeycombed, convex. Anthers not tailed, with a large apical scale. Style-arms truncate, pencilled at apex. Fertile achenes terete, ribbed and furrowed, slightly beaked, villous at base, pubescent; sterile linear, smooth. Pappus of the fertile flower of 10-12 rigid, subulate-acuminate, persistent scales; of the fertile, of more slender bristles.—*Fl. Cap.* iii. p. 134.

*C. aquaticus*, E. M., is a glabrous aquatic, found near Groenekloof and Saldanha Bay. Stems long and weak, distantly branched, rooting at the nodes or floating. Leaves alternate, clasping, entire; peduncles opposite the leaves, short, 1-headed; flowers white or yellowish.



46. **ÆDERA**, Linn.

Heads crowded in a bracteated cluster, cylindrical, few-flowered, radiate; ray-flowers few, female, elongate toward the circumference of the cluster, short towards the centre; disk-flowers tubular, 5-toothed, bisexual. Involucral scales appressed, scarious, in few rows. Receptacle paleaceous. Anthers tipped with a truncate appendage, without tails. Style-arms truncate. Achenes wingless, angular-cylindrical, glabrous. Pappus of several minute or longish, equal or unequal, semilanceolate scales, or crown-like, toothed.—*Fl. Cap.* iii. p. 134.

Small, densely leafy, slightly branched, rigid, South African shrubs. Leaves opposite or ternate, or spirally imbricate, rough-edged. Head-clusters terminal, sessile; flowers yellow.—4 species, all Western.

47. **CALLILEPIS**, DC.

Heads radiate; ray-flowers in 1 row, ligulate, female; disk-flowers 5-toothed. Involucral scales imbricated, lanceolate, subequal. Receptacle flat, bearing dry, acuminate, rigid, clasping paleæ. Style-arms cone-tipped. Achenes glabrous, of the ray 3-angled, compressed; of the disk flat. Pappus of 2-3 scarious, acuminate, unequal, keeled scales, sometimes with 1-2 minute additional.—*Fl. Cap.* iii. p. 136.

Glabrous or pubescent, rigid undershrubs, with subsimple stems. Leaves rigid, undivided, the lowest opposite, the rest alternate, linear or lanceolate. Heads terminal, solitary, many-flowered.—2 species, from Natal and Magalisberg.

48. **SPHENOGYNE**, R. Br.

Heads radiate; ray-flowers in 1 row, neuter; disk-flowers tubular, 5-toothed, bisexual. Receptacle bearing scarious, truncate, flower-clasping paleæ. Involucral scales imbricate, the inner larger, amply membrane-tipped. Achenes girt at base with a circle of long, soft, silky hairs. Pappus of about 5, obovate, obtuse broad scales, spirally rolled together in the unopened flower, much enlarged in fruit, and milk-white.—*Fl. Cap.* iii. p. 137.

A large African genus of undershrubs and herbs, strong-scented, with gland-dotted, mostly pinnate-parted, rarely serrate or entire, alternate leaves. Peduncles mostly nude, 1-headed, rarely panicle. Flowers yellow; the rays in many species coppery or dark brown on the under surface.—44 species, dispersed; many very handsome.

49. **URSINIA**, Gærtn.

Heads as in *Sphenogyne*, except,—1. Achenes obovate or pear-shaped, oblique, distinctly tapering at base, quite glabrous, obscurely 5-ribbed. 2. Pappus 2-seriate, the outer (as

in *Sphenogyne*) of 5 obovate, white, spiral scales, the inner of 5 slender, white bristles.—*Fl. Cap.* iii. p. 150.

Herbs or suffrutices, with the habit of *Sphenogyne*.—10 species, dispersed.

SUBTRIBE 3. ANTHEMIDEÆ. (Gen. 50–75.)

50. **EUMORPHIA**, DC.

Heads radiate ; rays 1-seriate, female ; disk-flowers bisexual, 5-toothed, dilated at base above the ovary. Involucre imbricate. Receptacle convex, covered with paleæ, enclosing the flowers. Anthers without tails. Style-arms divergent, obtuse. Achenes glabrous, prismatic, 3–4-angled, without pappus.—*Fl. Cap.* iii. p. 153 ; *Harv. Thes.* t. 70.

*E. Dregeana*, DC., is a small, glabrous shrub, with opposite, imbricate, linear, very small leaves, and terminal, peduncled heads ; rays white.—Grows on the Sneeuweberg.

51. **LASIOSPERMUM**, Lag.

Heads radiate ; rays female, ligulate, or minute and tubular ; disk-flowers tubular, 5-toothed, bisexual. Involucral scales imbricated, shorter than the disk. Receptacle broad, bearing paleæ. Style-arms truncate. Achenes wingless, without pappus, the younger hairy, the old involved in very thick wool.—*Fl. Cap.* iii. p. 153.

Glabrous herbs or undershrubs, with alternate, pinnatisect leaves, and long, 1-headed peduncles ; rays, when present, white.—3 species, dispersed.

52. **LIDBECKIA**, Berg.

Heads many-flowered, radiate ; rays 1-seriate, ligulate, neuter ; disk-flowers tubular, bisexual, 4-toothed. Involucre 2–3-seriate, the scales as long as the disk. Receptacle flattish, bearing a few filiform shreds. Style-arms truncate. Ovaries of ray abortive. Achenes of disk fertile, wingless, glabrous, without pappus, longitudinally ribbed, crowned by a cylindrical nectary.—*Fl. Cap.* iii. p. 154.

Undershrubs, with alternate, lobed or pinnatifid leaves, and 1-headed peduncles ; rays white.

53. **THAMNIOPHYLLUM**, Harv.

Heads few- or many-flowered, radiate ; rays ligulate, neuter ; disk-flowers bisexual, sharply 4-toothed. Involucral scales linear, subbiserial, loosely imbricate, herbaceous. Receptacle nude, narrow or conical. Anthers without tails. Style-arms truncate. Achenes oblong, subcompressed, glabrous, crowned with a hardened, conical style-base or nectary. Pappus 0. *Fl. Cap.* iii. p. 155.

Much-branched, twiggy, closely leafy, silky, small shrubs. Leaves alternate, crowded, linear, quite entire, 1-nerved, with reflexed margins. Heads subsessile or shortly pedicelled, terminal or in leafy racemes. Rays white. Very near *Lidbeckia* in floral structure, but extremely different in aspect.—2 species, in Swellendam and George.

#### 54. GAMOLEPIS, Less.

Heads radiate; rays ligulate, female; disk-flowers tubular, 5-toothed, bisexual, fertile. Involucral scales 1-seriate, connate into a cup for  $\frac{1}{3}$  or  $\frac{1}{2}$  their length, or more. Receptacle convex, nude or slightly honeycombed. Style-arms cone-tipped. Achenes glabrous, wingless, without pappus, with a terminal areole.—*Fl. Cap.* iii. p. 155.

Small shrubs or herbs, mostly glabrous. Leaves pinnatisect or entire, alternate. Peduncles 1-headed; flowers yellow.—12 species (1 undescribed), dispersed.

#### 55. STEIRODISCUS, Less.

Heads radiate; rays female, ligulate; disk-flowers bisexual but sterile, terete, 5-toothed. Involucre campanulate, 1-seriate. Receptacle nude. Ovaries of disk linear, glabrous, sterile. Style-arms cone-tipped. Achenes of ray obovoid, silky.—*Fl. Cap.* iii. 159.

Small annuals. Leaves pinnate-parted, the lobes linear-filiform. Heads terminal, solitary, yellow.—2 species, both Western.

#### 56. IOCASTE, E. Mey.

Heads radiate; ray-flowers 1-2-seriate, ligulate, female; disk-flowers 12-15, tubular, 5-toothed. Involucre 2-3-seriate, imbricate, the inner scales scarious-tipped. Receptacle nude. Style-arms truncate. Anthers not tailed. Achenes terete, with 8-10 obtuse, raised striæ, glandularly scabrid, without pappus, truncate.—*Fl. Cap.* iii. p. 160. *Oligoglossa*, *DC. Pr.* vi. p. 76.

A glabrous, many-stemmed undershrub, corymbose above. Leaves linear-subulate, erect, entire, keeled, pungent; heads pedicelled, yellow.—North-Eastern and Eastern districts.

#### 57? PHYMASPERMUM, Less.

Heads radiate; rays of two kinds, some ligulate, some filiform; disk-flowers bisexual, terete, 5-toothed. Involucre campanulate, imbricated. Receptacle nude, flat. Ovary wingless, without pappus, papillose-canescens, elliptical. Style-arms truncate.—*Fl. Cap.* iii. p. 160.

*P. junceum*, Less., a very little-known plant, is a much-branched shrub, with scattered, sessile, linear, keeled, very entire leaves, and solitary, small, terminal heads.

58. **ADENACHÆNA**, DC.

Heads radiate ; rays ligulate, in 1 row, female ; disk-flowers bisexual, 4-5-fid, with a terete tube. Involucral scales shorter than the disk, in 2-3 rows, subequal, narrow, the inner obtuse. Receptacle plano-convex, at length subglobose, minutely papillose. Achenes all subterete, without pappus, truncate, and denticled at the expanded summit ; rib striate, the striæ covered with papillæ or glandular granules.—*Fl. Cap.* iii. p. 160.

Erect, much-branched, glabrous or pubescent, small shrubs. Peduncles terminal, 1-headed, short. Leaves alternate, linear, 3-fid or on each side 1-toothed. Rays white, reflexed.—2 species, of which *A. parvifolia* ("Good Karroo") is one of the most valuable plants, as pasture, for Merino sheep.

59. **CHRYSANthemum**, Linn.

Heads radiate ; rays ligulate, 1-seriate, female or rarely neuter ; disk-flowers bisexual, 4-5-toothed, with a compressed, fleshy, 2-winged tube. Involucre imbricate, the scales membrane-edged. Receptacle nude, flat or convex. Style-arms truncate. Achenes dissimilar, those of the ray 3-angled or 3-winged, 2 angles or wings lateral, the third on the inner face ; of the disk compressed or subterete, with a short facial wing. Pappus 0 or coroniform.—*Fl. Cap.* iii. p. 161.

Herbs or small shrubs of various habit. Leaves alternate. Rays yellow or white.—5 South African species, dispersed.

60. **BRACHYMERIS**, DC.

Heads 8-16-flowered, homogamous. Involucre campanulate-ovate, imbricate ; scales appressed, oval-oblong. Receptacle nude. Corolla pubescent externally, with a short tube, 5-fid. Anthers not tailed. Style-arms truncate, short. Achenes terete, subcompressed, striate, beakless, scabrid, without pappus. *Fl. Cap.* iii. p. 163.

*B. scoparia*, E. M., is a very rigid, scrubby bush, with very small, thick, oblong or linear, obtuse, entire silky leaves and small, subsessile, crowded, subracemose heads. Flowers yellow.—North-Eastern and Eastern districts.

61. **MATRICARIA**, Linn.

Heads radiate or discoid ; rays ligulate, 1-seriate, female ; disk-flowers tubular, bisexual, 4-5-toothed, terete. Involucre imbricate, the scales membrane-edged, subequal. Receptacle ample, nude, globose or ovate-conical ! Style-arms truncate. Achenes wingless, angular, glabrous, similar in disk and ray, with a large, epigynous areole. Pappus 0, or shortly toothed, crown-like or ear-shaped.—*Fl. Cap.* iii. p. 163.

Annuals, with multiparted leaves and solitary or corymbose heads.—11 Cape species, of which 5 have white rays and 6 are discoid ; dispersed.

62. **TANACETUM**, Linn.

Heads discoid, either homogamous or heterogamous, having a few marginal, female, 2-3-4-toothed flowers. Involucre imbricate. Receptacle convex, nude. Corolla terete, 4-toothed. Achenes sessile, angular, glabrous, with a large epigynous disk. Pappus either 0 or minute and coroniform, entire or somewhat toothed, often oblique.—*Fl. Cap.* iii. p. 167.

A large genus in the Northern hemisphere, various in habit. Leaves alternate. Heads corymbose or solitary.—3 Cape species, all Eastern or from Natal.

63. **SCHISTOSTEPHIUM**, Less.

Heads discoid, heterogamous; marginal flowers female, with very short, bilabiate corollas; disk-flowers bisexual, but commonly abortive, 4-toothed. Involucre imbricate. Receptacle convex, nude. Achenes sessile, of the disk glabrous, ovuliferous, with 2-fid styles, of the margin silky, obovate. Pappus 0.—*Fl. Cap.* iii. p. 168.

Shrubs or halfshrubs, silky or tomentose. Leaves alternate, flabelliform and many-nerved, or pinnatisect. Heads corymbose; flowers yellow.—3 species, all Eastern.

64. **ARTEMISIA**, Linn.

Heads discoid, homo- or heterogamous; marginal flowers in 1 row, often female, 3-toothed, with a long, exserted, 2-fid style; disk-flowers 5-toothed, bisexual (sometimes abortive) or male. Involucre imbricate; scales membrane-edged. Receptacle nude or hairy-fimbriiferous. Achenes obovate, with a small, epigynous disk. Pappus 0.—*Fl. Cap.* iii. p. 169.

A very large genus in the Northern hemisphere.—*A. Afra*, the only Cape species, is a leafy undershrub; the leaves canous beneath, 2-pinnate-parted, with linear, acute, entire or toothed pinnules; heads racemoso-paniculate, small. Grows from Swellendam eastwards to Natal. "Wormwood," "Southernwood," and "Taragon," are familiar examples of cultivated species.

65. **HIPPIA**, Linn.

Heads discoid, heterogamous; marginal flowers in 1 row, female, filiform; disk-flowers male, 5-toothed. Involucral scales subbiseriate, elliptical or ovate, membrane-edged. Receptacle nude, convex. Marginal achenes roundish, flattened, with marginal ribs or wings; of disk, abortive. Pappus 0.—*Fl. Cap.* iii. p. 170.

Herbs or undershrubs, with the odour of Channomile. Leaves alternate, mostly pinnatisect, rarely entire. Heads small, yellow, corymbose.—4 species, dispersed.



66. **PENTZIA**, Thunb.

Heads homogamous. Involucre obovate, equalling the disk, its scales imbricate, scarious. Receptacle flat or convex, sparingly fimbriiferous. Corolla 5- rarely 4-toothed. Achenes angular, wingless, sessile. Pappus membranous, shortly tubular, irregularly torn, oblique or ear-shaped.—*Fl. Cap.* iii. p. 171.

Small, rigid, mostly canescent shrubs or halfshrubs. Leaves alternate, variously toothed, cut, or pinnatisect. Heads terminal, yellow, corymbose or solitary.—10 species, dispersed.

67. **MARASMODES**, DC.

Heads homogamous. Involucre ovate, imbricate, the outer scales scarious at tip. Receptacle narrow, nude. Corolla-tube short, glandular; limb 5-toothed. Anthers not tailed. Achenes terete, beakless. Pappus of several, separate, membranous, obtuse scales.—*Fl. Cap.* iii. p. 175.

Rigid, glabrous undershrubs. Leaves alternate, sessile, thickish, linear-terete, quite entire. Heads small, at the ends of the branches, subsessile.—2 species.

68? **ADENOSOLEN**, DC.

"Heads many-flowered, homogamous. Involucre imbricate, in about 3 rows. Receptacle convex, nude. Corolla-tube glandular, dilated at base and closely adhering to the ovary, the throat dilated, bell-shaped, 5-fid. Anthers tailless, exserted in the sterile, subincluded in fertile flowers. Style-arms exserted, capitellate. Achene terete, without pappus." (DC.)—*Fl. Cap.* iii. p. 175.

*A. tenuifolius*, DC., found near Uitenhage, by Ecklon, is a small shrub, with the habit of a *Marasmodes*.

69. **PEYROUSEA**, DC.

Heads many-flowered, discoid, homogamous. Involucre hemispherical, the scales in 2-3 rows, of subequal length, longer than the disk. Receptacle flat, nude. Tube of corolla flattened, 2-winged, the limb short, 4-lobed. Style-arms truncate. Achenes flattened, with a thick marginal rim, glabrous, similar, without pappus.—*Fl. Cap.* iii. p. 176.

Virgate, sparingly-branched, silky and silvery shrubs. Leaves alternate, sessile, crowded, oblong-lanceolate, quite entire. Heads corymbose.—1 (or 2?) species, South-Eastern.

70. **OTOCHLAMYS**, DC.

Heads discoid, heterogamous, all the flowers on tooth-like pedicels; marginal flowers 1-seriate, female, without corolla; disk-flowers 4-toothed; with a widely-winged tube, and pro-

duced at base into a broad, concave, ear-like spur, which completely enwraps the ovary and finally the achene! Involucre double, the outer of few, broad, loose scales, the inner of few or many, scarious, appressed scales. Receptacle flat, without paleæ, but rough with the persistent, tooth-like pedicels. Achenes of the marginal flowers flattened, with a marginal wing; of the disk-flowers oblong, wingless.—*Fl. Cap.* iii. p. 176.

*O. Eckloniana*, DC., is a small annual, with opposite, simple or pinnate-parted, slender leaves, and peduncled, terminal heads. Flowers yellow.—Found in wet, sandy spots about Capetown.

### 71. COTULA, Gærtn.

Heads discoid, heterogamous, rarely homogamous; marginal flowers in 1 or several rows, female, either without corolla or with a short, 2-toothed or filiform one; disk-flowers with a flat or winged tube, sometimes shortly 2-eared at base, and a 4-toothed limb. Involucre 2-3-seriate, of subequal, blunt scales. Receptacle flat or conical, papillate or nude. Achenes plano-compressed, often wing-margined, without pappus; those of the marginal flowers mostly stipitate.—*Fl. Cap.* iii. p. 177.

Small annuals or rarely perennials. Leaves rarely opposite or whorled, often sheathing at base, toothed, cut or pinnate-parted, with narrow lobes. Peduncles 1-headed.—22 Cape species, dispersed.

### 72. CENIA, Comm.

Heads shortly radiate or discoid; rays female, in 1-2 rows, shortly ligulate or 2-labiate, or some without corolla, rarely all the flowers tubular. Disk-flowers compressed, 4-toothed. Involucral scales 2-seriate. Receptacle convex, nude. Achenes compressed, wingless, but margined, without pappus.—*Fl. Cap.* iii. p. 184.

Small, hairy annuals or perennials, with pinnatisect, multifid leaves and 1-headed peduncles. The top of the peduncle is usually obconical and hollow, just beneath the involucre, an appearance which increases as the head becomes mature.—4 species, dispersed. *C. turbinata* is a very common weed.

### 73. STILPNOPHYTUM, Less.

Heads discoid, homogamous. Involucral scales imbricated, dry. Receptacle flat, nude. Achenes oblong, cylindrical, angularly ribbed or striate and furrowed, or cuneate, sub-compressed. Pappus 0.—*Fl. Cap.* iii. p. 186.

Glabrous shrubs, with the habit of *Athanasia*. Leaves linear, entire, alternate, rarely opposite. Heads corymbose, rarely solitary. Flowers yellow.—3 species, dispersed.

74. **ATHANASIA**, Linn.

Heads few- or many-flowered, discoid, homogamous. Involucre imbricate, scarious (except in *A. capitata*, where the outer scales are leafy). Receptacle bearing paleæ between the flowers. Corolla 5-toothed. Anthers without tails. Achenes oblong, sharply 5-angled or winged. Pappus either of several short, flat, unequal scales, or of swollen, jointed, short, deciduous hairs, or 0.—*Fl. Cap.* iii. p. 187.

Small shrubs or undershrubs, strongly scented and glandular. Leaves scattered, either entire, toothed, lobed or pinnate-parted. Heads mostly corymbose.—40 species, dispersed.

75. **ERIOCEPHALUS**, Linn.

Heads 10–15-flowered, heterogamous; rays female, with a 2-fid style and mostly ligulate, the ligule broadly obovate, toothed, sometimes very short and small; disk-flowers tubular, 5-toothed, male. Involucre double, the outer hemispherical, of 4–5 ovate, free scales; inner of cohering scales, very woolly externally. Receptacle bearing paleæ. Achenes of ray flattened, wingless, without pappus.—*Fl. Cap.* iii. p. 199.

Much-branched, rigid, mostly silky or silvery shrubs. Leaves small, alternate or opposite, or tufted, mostly linear, simple or 3-fid, rarely glabrous. Heads pedicelled or sessile, racemose, umbellate or solitary, subglobose, after flowering becoming very woolly.—17 species, dispersed.

## SUBTRIBE 4. GNAPHALIÆ. (Gen. 76–106.)

76. **RHYNEA**, DC.

Heads heterogamous, discoid; disk-flowers about 15, perfect, 5-toothed; marginal flowers about 5, filiform, female. Involucre imbricate, the inner scales with scarious, white, radiating points. Receptacle bearing linear, deciduous paleæ between the flowers. Anthers shortly tailed. Achenes obovate-oblong, beakless, downy. Pappus in 1 row, bristle-shaped.—*Fl. Cap.* iii. p. 204.

*R. phylacifolia*, DC., the only species, is a tall, straggling halfshrub, with canous branches. Leaves alternate, decurrent, lanceolate, green above, white beneath, with subrevolute margins. Heads in subsessile, compound corymbs; inner involueral scales and paleæ snow-white.—Natal.

77. **LEONTONYX**, Cass.

Heads 20–30-flowered, homo- or heterogamous, discoid; a few of the marginal flowers female, filiform, the rest 5-toothed, perfect. Involucre imbricate, the outer scales very woolly, inner long, rigidly membranous, hooked or straight. Receptacle nude. Achenes sessile, oblong, granulated. Pappus in a

double row, copious, of very slender caducous bristles.—*Fl. Cap.* iii. p. 205.

Densely woolly, herbaceous or half-shrubby, small plants, differing from *Helichrysum* only by their more copious pappus.—5 species, dispersed.

#### 78. *HELICHRYSUM*, Vaill.

Heads many- or few-flowered, discoid, either homogamous, all the flowers tubular, 5-toothed, bisexual; or heterogamous, the marginal flowers filiform, female, very few or in a single row. Involucre imbricating, dry and membranous. Receptacle without paleæ, either nude, honeycombed, toothed or fimbriate. Achenes beakless, sessile, usually minutely granulated (in *H. ericoides* silky). Pappus in 1 row, of many or few, slender, scabrous or serrulated bristles.—*Fl. Cap.* iii. p. 207.

A vast genus of herbs or undershrubs. Stem and leaves mostly woolly. Involucre either white rosy horn-colour or yellow. Corolla yellow, very rarely purple.—137 South African species, dispersed.

#### 79. *HELIPTERUM*, DC.

Characters as in *Helichrysum*, except: Pappus plumose. Heads homogamous. Receptacle honeycombed.—*Fl. Cap.* iii. p. 256.

Undershrubs or herbs, with woolly stems and leaves, resembling the more showy species of *Helichrysum*. Involucral scales either white yellow red or purple, glossy.—12 Cape species, dispersed.

#### 80. *GNAPHALIUM*, Linn.

Characters as in *Helichrysum*, except: Marginal female, flower filiform, in many rows, or much more numerous than the central, bisexual flowers.—*Fl. Cap.* iii. p. 260.

Herbs, often annual, resembling the small-flowered species of *Helichrysum*. Leaves woolly. Involucral scales, in the Cape species, either white pale horn-colour or straw-colour.—10 Cape species, dispersed.

#### 81. *AMPHIDOXIA*, DC.

Characters as in *Gnaphalium*, except: Marginal female flowers without pappus; disk-flowers with 5-6 caducous pappus-bristles, barbellate at the apex only.—*Fl. Cap.* iii. p. 263.

*A. gnaphaloides*, DC., found in Uitenhage and Albany, is a small, decumbent or trailing plant, resembling a *Gnaphalium*. Leaves oblong-spathulate, undulate, thinly silky or cobwebbed. Heads corymbose; inner involucral scales milk-white, obtuse, radiating.

#### 82. *ERIOSPHÆRA*, Less.

Heads crowded in globose, densely woolly glomerules, about 10-flowered, homogamous. Corolla 5-toothed, terete, glabrous.

Involucral scales in few rows, linear, enveloped in wool. Receptacle nude. Achenes narrow-obovate, angular, granulated. Pappus caducous, of few, very slender, hair-like bristles, smooth below, towards the apex beaded with swollen, roundish cells.—*Fl. Cap.* iii. p. 264; *Thes. Cap.* t. 149.

*E. Oculus-Cati*, Less., the only species, is a small woolly annual, with wiry stems and obovate, scattered leaves. Only found by Thunberg; the locality unknown.

### 83. LASIOPOGON, Cass.

Heads glomerated, many-flowered, heterogamous, the marginal flowers filiform, female, in one or more rows; disk-flowers 5-toothed, bisexual. Involucral scales in few rows, linear, scarious, immersed in wool. Receptacles nude. Achenes obovate, subcompressed, glabrous. Pappus in 1 row, plumose, with very long plumes.—*Fl. Cap.* iii. p. 264; *Thes. Cap.* t. 150.

Small annuals, with the aspect of *Eriosphæra*, but a very different pappus.—2 Cape species.

### 84. METALASIA, R. Br.

Heads few- or many-flowered, homogamous; all the flowers tubular, 5-toothed, bisexual. Involucral scales closely imbricated, the outer shorter, often acute or acuminate, inner mostly dilated and coloured at apex, dry and rigid. Receptacles nude. Young achene tapering to each end, somewhat stipitate and beaked; ripe achenes sessile. Pappus 1-seriate, of several rather broad, serrulate or clavate bristles.—*Fl. Cap.* iii. p. 265.

Erect or spreading, small shrubs. Branches closely leafy throughout. Leaves alternate, sessile, coriaceous, linear or oblong (small), with involute margins, concave and woolly above, convex and mostly glabrous beneath, very frequently spirally twisted and pungent. Heads mostly corymbose or fascicled, having in 2 species from 100 to 200 flowers, in all the others from 3 to 10 flowers.—20 species, dispersed.

### 85. LACHNOSPERMUM, Willd.

Heads many-flowered, homogamous, discoid. Involucre turbinate, the scales closely imbricate, with subpungent tips. Receptacles with a few marginal paleæ. Corolla tubular, 5-toothed. Achenes oblong, angular, the young ones villous at the angles, the full-grown densely hairy. Pappus 2-seriate, of slender, serrulate bristles.—*Fl. Cap.* iii. p. 272.

A slender straggling shrub, with spreading branches, leafy to the summit. Leaves minute, linear-terete, obtuse or mucronulate, slightly twisted, with axillary leaf-tufts, margins involute as in *Metalasia*. Heads solitary or subcorymbose.—*L. ericoides*, W., the only species, grows in Namaqualand.

### 86. PACHYRHYNCHUS, DC.

Heads about 10-flowered, homogamous, all the flowers 5-



toothed, bisexual. Involucre at first oblong, with short, leafy, villous accessory scales or bracts; the true scales long, scarious, shining, at length spreading. Receptacles nude, flat. Achenes ovate, very villous, sessile, crowned with a glabrous, thick beak. Pappus pilose, of roughish bristles, in several rows.—*Fl. Cap.* iii. p. 272.

*P. xeranthemoides*, DC., is a little-known, villous and canescent half-shrub, with sessile, lanceolate or oblong, callous-tipped, entire, crowded leaves; and straw-coloured involucre scales.

### 87. ELYTROPAPPUS, Cass.

Heads 2-8-flowered, homogamous. Involucre scales oblong, imbricate, horny. Receptacles nude. Achenes beakless, sessile. Pappus of several, broad-based bristles, united in a ring at base, plumose in their upper half, with a very minute or rarely a cup-shaped, external rim.—*Fl. Cap.* iii. p. 273.

Much-branched shrubs, growing in dry ground. Leaves minute or heath-like, mostly spirally twisted, more or less glandular and strongly scented. Heads small, subsessile in the axils of the upper leaves, solitary or few together, as if spiked.—6 species, chiefly Western; one of them, the “*Rhinoster Bosch*,” is the pest of the farmer, and finds its way everywhere.

### 88. PTEROTHRIX, DC.

Heads 3-10-flowered, homogamous. Other characters as in *Amphiglossa*.—*Fl. Cap.* iii. p. 275.

Small, spinous or unarmed shrubs, similar in habit to the next genus.—3 species, dispersed.

### 89. AMPHIGLOSSA, DC.

Heads 6-20-flowered, heterogamous, radiate; ray-flowers ligulate, sometimes very minute and shorter than the involucre; disk-flowers bisexual, 5-toothed. Involucre cylindrical, imbricate, scarious. Receptacles nude. Achene glabrous. Pappus of many, very slender, deciduous, separate bristles, closely and amply feathered through their whole length, with or without a minute, external annulus.—*Fl. Cap.* iii. p. 276.

Small, much-branched shrubs. Leaves small, linear or subulate, glabrous and convex externally, woolly within, with inflexed edges. Heads sessile, terminal.—3 species, dispersed.

### 90. BRYOMORPHE, Harv.

Heads several-flowered, radiate; ray-flowers few, ligulate, female; disk-flowers bisexual, 5-toothed. Involucre imbricate in few rows, the scales linear, separate, caducous. Receptacles naked. Anthers tailed. Style-arms truncate. Achene glabrous, beakless, sessile. Pappus of several, slender, scabrous

bristles in a single row.—*Fl. Cap.* iii. *p.* 277 ; *Thes. Cap.* *t.* 151.

*B. Zeyheri*, H., the only species, is a minute, densely-tufted, moss-like plant, forming level-topped cushions on mountain-tops. Leaves linear-subulate, mucronate, on both sides closely silvery. Heads solitary, terminal, half-sunk among the upper leaves. Ray- and disk-flowers purple.—On Table Mountain ; Hott. Holl. Mountains and Genadendal Mountains.

### 91. DISPARAGO, Gærtn.

Heads 2-flowered, one flower ligulate, either female or neuter, the other bisexual, 5-toothed. Involucre oblong, scales horny, linear, in few rows. Receptacle narrow. Achene oblong, glabrous or woolly. Pappus of 5 or many bristles, naked below, plumose above, often wanting in the ray-flowers.—*Fl. Cap.* iii. *p.* 277.

Dwarf, heath-like shrubs. Leaves spirally twisted, crowded, sessile, linear or subulate, involute, within tomentose, without glabrate or ciliate. Heads in terminal, round or oblong, very dense glomerules. Corolla purple or white.—5 species, dispersed.

### 92. STÆBE, Linn.

Heads 1-flowered. Involucral scales oblong, imbricate, dry-membranous, the outer short and often woolly. Corolla tubular, 5-toothed. Pappus of 5 or many bristles, naked below, plumose above, slightly united at base into a ring ; in many species a small rim or annulus, exterior to the pappus. Achene glabrous or woolly, sessile, beakless.—*Fl. Cap.* iii. *p.* 279 (*Stæbe and Seriphium, Auct.*).

Small, rigid shrubs or halfshrubs. Leaves crowded, narrow, often pungent, very entire, often spirally twisted, woolly and concave within, glabrate externally. Heads in dense tufts or in spikes. Flowers mostly purple or white.—18 species, dispersed.

### 93. PEROTRICHE, Cass.

Characters of *Stæbe*, except : Pappus 0!—*Fl. Cap.* iii. *p.* 285.

*P. tortilis*, Cass., found on the Cape flats, is so like *Stæbe perotrichoides* in aspect, that it may easily be mistaken for it ; it is always distinguishable by the want of pappus.

### 94. TRICHOGYNE, Less.

Heads several-flowered, monœcious, all the flowers tubular ; female marginal, 1-6, among the innermost involucral scales or paleæ ; male numerous, central, 5-toothed. Involucral scales loosely imbricate. Receptacles with marginal paleæ, nude in the centre. Pappus 0 in the female flowers ; in the male 1-seriate, of slender bristles, plumose in the upper part.—*Fl. Cap.* iii. *p.* 285.

Depressed, densely leafy undershrubs. Leaves minute, linear, as in *Stæbe*. Heads in tufts or spikes.—7 species, dispersed.

#### 95. PHÆNOCOMA, Don.

Heads very many-flowered, monœcious, all the flowers tubular, 5-toothed; marginal female, in a single row; central male, with abortive stigmas. Involucre imbricate; inner scales lanceolate, radiating. Receptacle nude. Pappus in one row, of many rough bristles; in the female flowers variously cohering, in the males club-shaped.—*Fl. Cap.* iii. p. 287.

*P. prolifera*, Don, the only species, is a much-branched, robust, small shrub, with tomentose branches. Twigs very short, closely imbricated with minute, scale-like, bluntly ovate, glabrous leaves. Heads large, terminal, solitary; involucre imbricate in many rows, the scales woolly at base; outer short, appressed; inner very long, radiating, acuminate, rosy-purple.—Mountains in Stellenbosch, Worcester, and Caledon.

#### 96. PETALACTE, Don.

Heads 10–20-flowered, monœcious, all the flowers tubular, 5-toothed; marginal few (1–3) female, hidden among the innermost involucral scales; the rest male. Involucre imbricate, the outer scales scarious, very hairy; inner clawed, with petaloid (white) radiating, obtuse laminae. Receptacle with marginal paleæ, nude in centre. Achenes beakless, glabrous, the central abortive. Pappus in one row, of slender bristles, those of the male flowers subplumose or clavate at the apex.—*Fl. Cap.* iii. p. 288.

Small shrubs or halfshrubs, with woolly, entire, spathulate or obovate leaves. Heads corymbose.—2 species, both Western.

#### 97. ANAXETON, Cass.

Heads few-flowered, monœcious, all the flowers tubular, 5-toothed; 1–2 female, the rest male. Involucral scales in many rows, dry, loosely imbricate, the innermost clawed, spathulate, with a roundish (white rosy or purple) lamina. Receptacle without paleæ, woolly or glabrous. Style in the males quite simple. Achenes sessile, cylindrical, beakless, the fertile granulated or pubescent. Pappus of a few scabrous or shortly plumose bristles, shorter than the flower.—*Fl. Cap.* iii. p. 289.

Small shrublets, erect or ascending. Leaves coriaceous, rigid, entire, mucronate, with revolute margins. Heads in peduncled corymbs; involucral scales white or rosy-purple.—6 species, all Western.

#### 98. ATHRIXIA, Ker.

Heads many-flowered, heterogamous; ray-flowers in a single row, ligulate or 2-ligulate, female; disk-flowers bisexual, 5-toothed, tubular. Involucre turbinate, the scales closely im-

bricate in many rows, aristate, recurved at the points. Receptacle nude. Achenes oblong, beakless, sometimes with a tuft of hairs at base, sometimes nude, glabrous or pilose. Pappus of rough bristles in a single row; or of bristles and short, serrulate scales alternating.—*Fl. Cap.* iii. *p.* 291.

Undershrubs. Leaves decurrent or sessile, linear or narrow (rarely ovate-lanceolate), rigid, with revolute edges, tomentose beneath. Heads terminal, solitary; rays white or purple.—6 species, all, but *C. Capensis*, Eastern.

### 99. ANTITHRIXIA, DC.

Heads many-flowered, radiate, the ray-flowers ligulate, flat, female; disk-flowers tubular, 5-toothed. Involucre imbricate, the scales linear-oblong, with dry, obtuse points. Receptacle nude. Achenes terete, glabrous, with a small pubescent stipe, subrostrate. Pappus in one row, of very many, rigid, roughish bristles, slightly united at base.—*Fl. Cap.* iii. *p.* 293.

*A. flavicoma*, DC., the only species, is found on the Camiesberg. A small, dwarf, branched and twiggy shrub. Leaves opposite, linear, short, obtuse, woolly above, glabrate beneath. Heads terminal solitary; disk and ray yellow.

### 100. LEYSSERA, Linn.

Heads many- or few-flowered, radiate; ray-flowers ligulate, female, with shorter ovaries; disk-flowers tubular, 5-toothed, bisexual. Involucre imbricate, of dry scales. Receptacle subfimbriate. Achenes terete, shortly beaked, with a terminal areole. Pappus in one row; in the ray-flowers of short scales; in the disk, of long, plumose bristles, alternating with small scales.—*Fl. Cap.* iii. *p.* 393.

Undershrubs or herbs. Branches slender, leafy, ending in one-headed peduncles; leaves linear, often tufted; flowers yellow.—3 species, from the Western and Northern districts.

### 101. ROSENIA, Thunb.

Heads many-flowered, radiate; ray-flowers ligulate, female; disk-flowers tubular, bisexual, 5-toothed, the teeth erect. Involucre imbricate, the scales dry, membrane-edged. Receptacle bearing conduplicate, scarious paleæ. Achenes beakless, glabrous; of the ray 3-cornered, 3-ribbed; of the disk terete, furrowed. Pappus of the disk-flowers in two rows, the outer of many short, broad scales, the inner of 2 long bristles; of the ray of many short scales.—*Fl. Cap.* iii. *p.* 294.

A rigid shrub. Leaves minute, opposite, decussate. Heads terminal, solitary.—Only found by Thunberg; a very rare and little-known plant.

### 102. NESTLERA, Spreng.

Heads many-flowered, radiate; ray-flowers female, ligulate

disk-flowers 5-toothed, tubular, perfect. Involucral scales imbricate in several rows, the inner scales longer, membranous, arid. Receptacle without paleæ, either honeycombed or fimbriate. Achenes beakless, sessile, glabrous or pubescent. Pappus short, either a toothed crown or of several, short, separate or connate scales.—*Fl. Cap.* iii. p. 295. (*Nestlera* and *Polychætia*, *Less.*)

Small, arid, rigid shrubs ; rarely biennials or annuals. Leaves alternate or opposite, sessile, linear or oblong, entire. Flowers yellow. Heads solitary, terminal or in the forks.—11 species, dispersed.

### 103. RELHANIA, L'Hér.

Heads many-flowered, radiate ; ray-flowers 1-seriate, female, ligulate ; disk-flowers tubular, 5-toothed, bisexual, sometimes sterile. Involucre ovate or cylindrical, the scales hard and dry, closely imbricating. Receptacle flat, bearing paleæ between the flowers. Achenes linear-prismatic, glabrous or pubescent, slender, sometimes shortly beaked. Pappus either crown-like and shortly-toothed or subentire ; or of many small, sharp scales.—*Fl. Cap.* iii. p. 298. (*Relhania*, *Eclopes*, and *Rhynchopsidium*, *Auct.*)

Small rigid shrublets or rigid annuals, often gummy. Leaves alternate or opposite, entire, small. Heads terminal, solitary or corymbose. Flowers yellow.—16 species, dispersed.

### 104 ? OLIGODORA, DC.

Heads 5-flowered, homogamous ; flowers 5-toothed, tubular, perfect. Involucre imbricate, subtrigonus, the scales appressed, the innermost with the margin clasping round the outer achenes. Receptacle narrow, paleaceo-fimbriiferous, the scales folding round the achenes. Style-arms included, obtuse and pilose at the apex. Anthers tailed ? Achenes cylindrical, smooth. Pappus of 5 ovate, short, toothed scales.—*Fl. Cap.* iii. p. 303.

*O. dentata*, DC., is a little-known undershrub, from the Aderberg. Leaves alternate, thickish, sessile, toothed, mucronate. Heads corymbose.

### 105. OSMITES, Linn.

Heads many-flowered, radiate ; ray-flowers ligulate, female ; disk-flowers tubular, 5-toothed, bisexual. Involucre hemispherical, the scales multiseriate, herbaceous, subequal. Receptacle flat, bearing scarious paleæ. Anthers tailed. Achenes sessile, beakless, glabrous or downy, somewhat 4-sided, compressed. Pappus of many short scales.—*Fl. Cap.* iii. p. 303.

Undershrubs, with alternate, crowded, sessile, oblong obovate or linear,



entire toothed or pinnatifid, gland-dotted and strongly-scented leaves. Heads solitary; rays white.—6 species, dispersed.

### 106. OSMITOPSIS, Cass.

Characters as in *Osmites*, except: Ray-flowers neuter. Pappus 0.—*Fl. Cap.* iii. p. 305.

*O. asteriscoides*, Cass., is a closely leafy, erect, balsamic shrub, found on Table Mountain summit, and in similar situations in the Western districts. Leaves lanceolate, sessile, entire or nearly so, pubescent or glabrous. Heads terminal; rays white.

### SUBTRIBE 5. SENECTIONEÆ. (Gen. 107–119.)

### 107. STILPNOGYNE, DC.

Heads 7–8-flowered, heterogamous, discoid, all the flowers tubular; 3 marginal, 3-toothed, female; 4–5 central, bisexual, 5-toothed. Involucral scales 5–7, in 1 row, equalling the disk, valvate, connate at base. Receptacle nude, narrow. Style-arms in the central flowers short, bearded at the truncate summit; in the marginal longer, terete, downy. Achenes oblong, tapering to both ends, granulated; those of the female flowers without pappus. Pappus in the disk-flowers 1-seriate, of many scabrid bristles.—*Fl. Cap.* iii. p. 306.

*S. bellidioides*, DC., is a small, glabrous annual of Namaqualand. Leaves on long petioles, roundish, cuneate at base, bluntly 5–7-lobed, occasionally with 1–2 runcinate lobes on the petiole. Stem filiform, nude, branched.—Flowers yellow.

### 108. OLIGOTHRIX, DC.

Heads many-flowered, radiate; ray-flowers about 5, female; disk-flowers 5-toothed, bisexual. Involucre 1-seriate, hemispherical, nude at base, of 12–15 connate, striate scales. Receptacle nude, flat. Anthers exerted, enclosing the style. Achenes obtusely 5-angled, beakless, granulated on the angles. Pappus of 5 very caducous, wavy, barbellate bristles.—*Fl. Cap.* iii. p. 306.

*O. gracilis*, DC., is a wiry, glabrous, branching annual, found on the Aderberg. Stems branched from the base; leaves small, eared and stem-clasping, oblong-lanceolate, dentate. Flowers yellow.

### 109. MESOGRAMMA, DC.

Heads many-flowered, radiate; ray-flowers 1-seriate, ligulate, female. Involucral scales 1-seriate, slightly calyced, of about 20 acuminate scales, each marked by 2 linear, intramarginal glands. Receptacle flat, nude. Disk-flowers tubular, 5-toothed, 5-lineate, the medial nerves strongly marked, intervals pellucid or faintly nerved. Style-branches truncate.

Young achenes compressed ; adult 5-angled, tapering to each end, ciliate on the angles, with a very short beak covered with thick bristles, resembling an outer pappus. Pappus 1-seriate, bristle-shaped, very slender, deciduous ; in the disk-flowers of many, in the ray of few bristles.—*Fl. Cap.* iii. p. 306.

A rigid, glabrous perennial, found near Verleptpram on the Gariep. Stems branched above. Leaves on long petioles, pinnatisect, the lobes lanceolate, toothed. Branches ending in nude, 1-headed pedicels, subcorymbose. Corolla pale yellow, with red medial lines.

### 110. CINERARIA, Linn.

Heads many-flowered, rarely discoid, mostly radiate ; rays ligulate, female ; disk-flowers tubular, 5-toothed, the medial nerve strongly marked. Involucre 1-seriate, mostly calyced, the scales membranous-edged. Receptacle nude, flat. Style-arms in the disk-flowers tipped with a short cone. Achenes mostly flattened, often (at least the outer ones) winged at margin. Pappus in 1 or more rows, capillary, caducous.—*Fl. Cap.* iii. p. 307.

Herbs or undershrubs. Leaves alternate, mostly petioled, the petiole often eared at base, the lamina lobed, toothed or lyrate-pinnatisect, or reniform. Heads mostly corymbose.—22 species, dispersed.

### 111. LOPHOLÆNA, DC.

Heads many-flowered, all the flowers tubular, 5-fid, with a terete tube ; the marginal flowers mostly cleft on the inner side, with abortive anthers ; those of the disk bisexual, sometimes abortive. Involucre 5-leaved, the scales free, leaf-like, broadly keel-crested at back, winged at the sides. Receptacle honeycombed. Style-arms in the perfect flowers elongate, downy at back, produced at apex into a long, everywhere hispid, subacute appendix. Achenes angular, beakless, glabrescent, ciliate at the angles, the central often abortive. Pappus multiseriate, bristle-shaped, scarcely rough.—*Fl. Cap.* iii. p. 314.

*L. Dregeana*, DC., a robust, glabrous undershrub, with alternate, half-clasping, oblong, obtuse, rigid, entire, 3-nerved leaves and subcorymbose heads ; is found near Natal.

### 112. CACALIA, Linn.

Heads several-flowered, homogamous ; all the flowers tubular, 5-fid, bisexual. Involucre 1-seriate, of 5-30 scales, with a few bracteoles at base. Receptacle nude. Style-arms tipped with a short cone, hispid at base. Achenes oblong, beakless, glabrous. Pappus 1-seriate, of many rigid, scabrous bristles.—*Fl. Cap.* iii. p. 315.

Chiefly an American and Asiatic genus. *C. ? cissampelina*, DC., the only Cape species, is a climbing halfshrub, cobwebby, becoming glabrate; leaves petioled, bluntly 3-5-angled, 5-7-nerved, netted-veined, with mucronate angles; peduncles axillary, short, corymbose; heads 9-10-flowered.—Found on the Katberg.

### 113. KLEINIA, Linn.

Heads many-flowered, discoid, almost homogamous (in 1-2 species heterogamous); all the flowers tubular, 5-toothed. Involucre 1-seriate, many-leaved, with a few small bracteoles at base, rarely nude. Receptacle nude, flat. Style-arms tipped with a short cone, ciliate at base. Achenes beakless. Pappus bristle-shaped, roughish, in many rows.—*Fl. Cap.* iii. p. 315.

Fleshy herbs or shrubs, sometimes nearly stemless, often glaucous. Leaves alternate, mostly quite entire, often very thick and juicy. Flowers white or pale yellow.—18 Cape species, dispersed.

### 114. DORIA, Less.

Characters as in *Othonna*, except: Heads discoid. Corolla of the marginal female flowers tubular, truncate, shorter than the involucre, never ligulate.—*Fl. Cap.* iii. p. 320.

Herbs or shrubs, with completely the aspect of *Othonna*.—27 species, dispersed.

### 115. OTHONNA, Linn.

Heads radiate; ray-flowers ligulate, female; disk-flowers male, tubular, 5-toothed. Involucral scales 1-seriate, never calyced, more or less concrete before opening, and strictly valvate. Receptacle convex or subconical, honeycombed, sometimes pilose. Style of male flowers simple, tipped with a hispid cone. Anthers rounded at base! Achenes of the ray-flowers oval, hairy or glabrous, with very copious, bristle-shaped pappus in many rows; of the disk-flowers abortive, slender, glabrescent, with 1-seriate pappus.—*Fl. Cap.* iii. p. 327; *Thes. Cap.* t. 15.

Small shrubs or herbs, mostly glabrous, often glaucous. Roots in the herbaceous species often tuberous. Leaves entire or variously cut, lobed or toothed; either membranous coriaceous or fleshy. Heads solitary or corymbose.—58 Cape species, dispersed.

### 116. GYMNODISCUS, Less.

Heads several-flowered, radiate; ray-flowers shortly ligulate, female; disk-flowers 5-fid, male. Involucral scales 1-seriate, connate at base, not calyced. Receptacle nude. Achenes glabrous, ovate or obovate. Pappus 1-seriate in the ray; 0 in the disk-flower.—*Fl. Cap.* iii. p. 345.

Small annuals. Leaves chiefly radical, rosulate, lyrate or linear. Stem branched. Heads small, corymbose, yellow.—2 species, both Western.

### 117. **SENECIO**, Linn.

Heads either discoid homogamous or radiate; ray-flowers ligulate, female; disk-flowers 5-toothed, bisexual. Involucre 1-seriate, rarely quite nude at base, usually more or less calyceled; involucre scales frequently with withered or dark tips, membrane-edged, often 2-nerved. Receptacle nude or honeycombed. Style-arms of the disk-flowers truncate. Achenes terete, truncate or slightly tapering at the summit. Pappus multiseriate, pilose, caducous, the bristles straight, very slender, roughish.—*Fl. Cap.* iii. p. 346. (*Senecio and Brachyrhynchos*, DC.)

A vast, cosmopolitan genus, of many hundred species, of which nearly 180 are found at the Cape. Some are trees, others shrubs, halfshrubs, stemless perennials or annuals. Leaves alternate. Flowers yellow or purple.

### 118. **EURYOPS**, Cass.

Heads many-flowered, radiate; rays female, ligulate; disk-flowers 5-toothed, bisexual. Involucre scales 1-seriate, their margins more or less concrete, valvate in æstivation. Receptacle convex or conical, mostly honeycombed. Style-arms truncate. Achenes roundish or subcompressed, wingless, beakless. Pappus multiseriate, caducous, of rough, brittle, flexuous bristles, the outer ones often deflexed or decurrent.—*Fl. Cap.* iii. p. 408; *Thes. Cap.* t. 153.

Small shrubs, all but one South African. Leaves alternate, crowded, coriaceous or fleshy, entire, serrate, 3-fid, or pinnate-parted. Peduncles nude, 1-headed. Flowers yellow. Involucre never calyceled.—26 species, dispersed.

### 119. **RUCKERIA**, DC.

Heads many-flowered, heteromonœcious, radiate; rays ligulate, female; disk-flowers mostly abortive. Involucre 1-seriate, the scales more or less concrete at base. Receptacle subconvex, areolate. Style-arms in the disk-flowers truncate. Ray-achenes oblong, terete, those of the disk slender, abortive, velvety. Pappus in many rows, similar, caducous, the bristles exceedingly slender, slightly nodulose, jointed, smooth, at length aggregated in copious woolly tufts.—*Fl. Cap.* iii. p. 416.

Undershrubs or herbs, with the habit of *Euryops*. Stem leafy at base, ending in long, nude, 1-headed peduncles. Leaves pinnate-parted. Flowers yellow.—3 species, all Western.

## SUBTRIBE 6. CALENDULÆ. (Gen. 120-124.)

## 120. DIMORPHOTHECA, Vaill.

Heads radiate ; rays ligulate, female ; disk-flowers 5-toothed, either all abortive or all bisexual, or (more usually) the outer ones bisexual, inner male, with abortive style and ovary. Involucre 1-seriate, of linear, acuminate scales. Receptacle flat, becoming convex, nude or with a few deciduous paleæ. Style of the fertile disk-flower shortly 2-fid, the arms diverging, round-topped, glandular at margin and piliferous externally ; of the female ray-flowers with long, glabrous arms. Achenes without pappus, straight, those of the ray wingless, obconic, 3-cornered, tuberculated or sharply toothed, rarely smooth ; of the disk flattened, with marginal, thick, wide wings.—*Fl. Cap.* iii. p. 417 (including *Acanthotheca*, DC.!).

Herbs or undershrubs, very often viscid and glandular. Leaves alternate, toothed lobed or pinnate-parted, rarely entire, often scabrid. Heads terminal, solitary ; disk-flowers yellow brown or rarely purple ; rays white with purple underside, or purple or yellow.—20 species, dispersed.

## 121. TRIPTERIS, Less.

Heads many-flowered, monœcious, radiate ; rays ligulate, female ; disk-flowers 5-toothed, bisexual, but sterile. Involucre 1-2-seriate, the scales free, often membrane-edged. Receptacle nude, flat. Anthers minutely setose. Styles of ray 2-fid ; of disk undivided. Achenes of ray 3-cornered, the angles produced in mostly unequal wings, the sides smooth or echinate, straight, substipitate, beaked, the beak hollow, on one side closed with a hyaline membrane.—*Fl. Cap.* iii. p. 424.

Herbs, undershrubs or rigid shrubs, mostly glandularly viscid and strongly scented. Leaves opposite or alternate, entire or toothed or cut. Heads panicle or terminal, solitary. Rays yellow white or purplish.—27 species, dispersed.

## 122. OLIGOCARPUS, Less.

Heads few-flowered, monœcious ; rays ligulate, female ; disk-flowers male. Involucre 1-seriate. Receptacle nude. Achenes of ray sessile, polymorphous, terete or 3-gonous, scabrous or smooth, or ridged and pitted, wingless or minutely 3-winged, beaked or nearly or quite beakless, the beak either solid and horn-like, short and knob-like, or hollow and cup-like!—*Fl. Cap.* iii. p. 433.

A small, many-stemmed, hairy and glandular annual. Leaves alternate. Fruit varying as above, often on the same root!—Dispersed, but commoner in the Eastern district.



123. **OSTEOSPERMUM**, Linn.

Heads many-flowered, radiate; rays ligulate, female; disk-flowers tubular, 5-toothed, male, with abortive ovary and style. Involucre in few rows, the scales free. Receptacle nude, rarely setigerous. Achenes of ray drupaceous or nut-like, thick, very hard, glabrous, beakless, without pappus.—*Fl. Cap.* iii. p. 433.

Shrubs or undershrubs, rarely herbaceous. Leaves alternate, very rarely opposite, toothed entire or pinnatifid. Heads yellow. Achenes bluntly or sharply 3-angled, or 3-winged occasionally.—38 species, dispersed.

124? **XENISMIA**, DC.

“Heads monœcious; ray-flowers 5–7, female, ligulate; disk-flowers 10–12, tubular, 5-toothed, male. Involucral scales oblong, in a single row. Receptacle without paleæ. Rays obtuse, ciliate at base. Anthers . . . . Style . . . . Achenes of disk 0; of ray thick, glabrous, without pappus, everywhere bristling with thick, rigid thorns. Seeds thickish, oblong, tapering at base.” (*DC.*)—*Fl. Cap.* iii. p. 446.

*X. acanthosperma*, DC., is a many-stemmed annual of the Kaus mountains (unknown to me). Leaves alternate, oblong-cuneate, toothed at the point, tapering at base. Heads small, at the ends of the branches.

## TRIBE 5. CYNARÆE. (Gen. 125–146.)

## SUBTRIBE 1. ARCTOTIDÆE. (Gen. 125–140.)

125. **ARCTOTIS**, Linn.

Heads radiate; rays female, ligulate; disk-flowers 5-toothed, bisexual. Involucre bell-shaped, its scales in several rows, free, the outer small, herbaceous, inner longer, obtuse, scarious-membranous. Receptacle honeycombed, fimbriiferous. Filaments smooth. Achenes mostly pubescent, copiously silky (in most species) near the base, ovate, dorsally 3–5-winged or ridged, the lateral wings or ridges inflexed, either entire or toothed, the medial straight, narrower. Pappus in 2 rows, paleaceous, the scales of the inner row mostly 8, spirally twisted before the opening of the flower, sometimes very small.—*Fl. Cap.* iii. p. 448.

Stemless or caulescent, unarmed herbs. Leaves alternate, petioled, variously cut or subentire, often hoary on one or both sides. Heads peduncled, solitary.—30 species, dispersed.

126. **VENIDIUM**, Less.

Characters of *Arctotis*, except: Achenes mostly glabrous, without any basal tuft of silky hairs. Pappus 0, or of 4 very minute unilateral scales.—*Fl. Cap.* iii. p. 458.

Herbs with the aspect of *Arctotis*.—18 species, dispersed.

### 127. HAPLOCARPHA, Less.

Heads radiate ; ray-flowers ligulate, female ; disk-flowers 5-toothed, bisexual. Involucral scales imbricate, multiseriate, the outer acuminate, inner scarious. Receptacle nude, flat. Filaments granulated ! Achenes wingless, turbinate, silky or glabrous, with a tuft of silky basal hairs. Pappus 1-seriate, of many narrow, tapering, very delicate, diaphanous, nerved scales.—*Fl. Cap.* iii. p. 464.

Stemless perennials. Radical leaves numerous, petioled, entire or lyrate-pinnatifid, tomentose with white hairs beneath. Scapes 1-headed, longer than the leaves.—4 species, dispersed.

### 128. LANDTIA, Less.

Characters of *Haplocarpha*, except : Filaments quite smooth ! —*Fl. Cap.* iii. p. 466.

Stemless perennials, with many radical leaves. Scapes shorter than the leaves.—2 species, both Eastern.

### 129. ARCTOTHECA, Wendl.

Heads radiate ; ray-flowers ligulate, neuter ; disk-flowers bisexual. Involucral scales imbricate in many rows, the outer linear, herbaceous, inner larger, scarious, very obtuse. Receptacle honeycombed, fimbriiferous. Filaments papillose ! Achenes ovate, somewhat 4-sided, without wings or pappus.—*Fl. Cap.* iii. p. 467.

*A. repens*, W., is a caulescent, creeping or decumbent herb. Leaves petioled, lyrate-pinnatifid, green and mostly smooth above, white-woolly beneath.—Found about Capetown and in the Western districts.

### 130. CRYPTOSTEMMA, R. Br.

Heads radiate ; rays ligulate, neuter, often irregularly cleft or cut or 2-ligulate ; disk-flowers bisexual. Involucral scales in many rows, imbricated, the outer narrow, herbaceous ; inner membranous, obtuse. Receptacle honeycombed. Filaments scabrous ! Achenes wingless, very thickly clothed with long, soft, silky hairs. Pappus 1-seriate, paleaceous, hidden among the hair of the achene.—*Fl. Cap.* iii. p. 467.

Stemless or caulescent herbs, more or less tomentose. Leaves very variable in size and incision, lyrate-pinnatifid, runcinate or rarely undivided. Rays yellow ; disk dark-coloured.—2 species. *C. calendulaceum* is a common weed in waste places throughout the colony.

### 131. MICROSTEPHIUM, Less.

Heads radiate ; rays ligulate, neuter ; disk-flowers 5-toothed,

bisexual. Involucral scales multiseriate, imbricate, unarmed, the inner membrane-edged. Receptacle slightly honeycombed. Filaments scabrous! Achenes wingless, tomentose. Pappus 1-seriate, crown-like, crenate, callous at base, membranous at apex, after flowering turned inwards.—*Fl. Cap.* iii. p. 468.

*M. niveum*, Less., the only species, is a decumbent or creeping plant, closely white-woolly in most parts. Leaves long-petioled, roundish-ovate, repand. Peduncles 1-headed; flowers yellow, not showy.—It grows on and near sandy seashores, from Capetown to Natal.

### 132. HETEROLEPIS, Cass.

Heads radiate; ray-flowers female, ligulate; disk-flowers 5-toothed, bisexual. Involucral scales free, in 2–3 rows, the outer lanceolate-acuminate, dorsally woolly; inner longer, oval, with a membranous, fringed apex. Receptacle honeycombed, villous in the middle. Ray-flowers with a very minute, cirrhiform inner lobe; the outer ample, 4-toothed. Filaments smooth. Anthers shortly tailed. Style smooth, 2-fid. Achenes very villous, oblong.—*Fl. Cap.* iii. p. 469.

Undershrubs with the young branches woolly. Leaves crowded, sessile, linear, tomentose below, margins recurved. Heads terminal, solitary. Flowers yellow.—3 species, all Western.

### 133. GORTERIA, Gærtn.

Heads radiate; rays ligulate, neuter; disk-flowers very sharply 5-toothed, some of the outer fertile, having a 2-fid style and abortive stamens, the central ones sterile, with a simple style and perfect stamens. Involucral scales multiseriate, concrete into an urceolate, at length closed tube, the apices linear-subulate, free, at length squarrose. Receptacle nearly nude. Filaments smooth. Achenes obovate, 3-angled, narrowed at base, barbed at apex, otherwise subglabrous, with a short crown-like pappus; outer skin of the achene membranous, easily peeling off.—*Fl. Cap.* iii. p. 469.

Hispid annuals, the seed germinating within the closed involucre, which remains like a bulb, through which the fibrous root pierces. Leaves alternate, entire or toothed, scabrous above, white beneath. Heads solitary or subcorymbose, terminal.—4 species, all Western.

### 134. GAZANIA, Gærtn.

Heads radiate; rays ligulate, neuter; disk-flowers 5-toothed, bisexual. Involucral scales in 2 or several rows, concrete below into an urceolate cup, toothed round the apex. Receptacle honeycombed, the cells shallow. Filaments smooth. Achenes wingless, very villous. Pappus 2-seriate, of very delicate, scarious, toothed scales, often hidden in the wool of the achene.—*Fl. Cap.* iii. p. 471.

Herbaceous, unarmed, perennial or rarely annual plants, stemless or caulescent. Leaves either crowded at the crown of the root or scattered along the stem, variable in shape on the same plant, very rarely glabrous, commonly white-tomentose beneath. Peduncle nude, 1-headed. Heads often of large size, very showy; the rays rarely white, usually yellow or orange, often dark brown at base or eye-spotted, reflecting peacock colours; disk-flowers dark.—24 species, dispersed.

### 135. CULLUMIA, R. Br.

Heads radiate; ray-flowers ligulate, neuter; disk-flowers 5-toothed, bisexual. Involucral scales multiseriate, concrete at base, the outer pectinate-spinous, similar to the leaves, inner entire or fimbriate, pungent. Receptacle very deeply pitted, the walls of the pits raised, enclosing the achenes; apices setigerous. Achenes angular, glabrous, without pappus.—*Fl. Cap.* iii. p. 480.

Small shrubs or undershrubs. Branches leafy to the summit; leaves alternate, margined with slender, spinous cilia; heads terminal, sessile; flowers yellow.—14 species, dispersed.

### 136. HIRPICIUM, Cass.

Heads radiate; rays neuter; disk-flowers 5-toothed, bisexual. Involucral scales concrete at base, multiseriate. Receptacle shortly honeycombed. Filaments smooth. Achenes wingless, covered with long, soft hairs. Pappus 1-seriate, coroniform, splitting into bristles.—*Fl. Cap.* iii. p. 485.

Much-branched dwarf-shrubs. Leaves sessile, linear, with revolute margins, white beneath. Heads terminal, solitary.—2 species, both Western and North-Western.

### 137. STEPHANOCOMA, Less.

Character as in *Stobæa*, except: Pappus-scales 1-seriate, very short, at first concrete into a crenate, cup-like crown, afterwards partially separating.—*Fl. Cap.* iii. p. 485.

*S. carduoides*, Less., is a thistle-like herb, with many long, deeply pinnatifid or pinnate-parted, spinous-toothed, green, undulate radical leaves, and decurrent stem leaves, shorter but similar. Heads discoid, subeumbrose or paniced. Bristles of the receptacle very long and rigid.—Eastern districts.

### 138. STOBÆA, Thunb.

Heads either discoid, all the flowers tubular and bisexual, or radiate, the rays neuter. Involucral scales in many rows, concrete at base, pungent-spinous. Receptacle honeycombed, the cells deep, nearly enclosing the achenes, cleft at the apex into bristle-shaped fimbrials. Stamens smooth. Achenes turbinate, furrowed, glabrous downy or villous. Pappus-scales in 1-2 rows, equal, or the alternate narrower, oval or oblong,

obtuse, toothed at the apex.—*Fl. Cap.* iii. p. 486 (incl. *Apuleia*, Less.).

South African thistle-like herbs or undershrubs, with yellow flowers. Leaves very spiny, mostly pinnatisect.—43 (or 46) species, dispersed.

### 139. **BERKHEYA**, Ehrh.

Heads radiate, rarely discoid; rays neuter; disk-flowers bisexual. Involucral scales free or more or less concrete, in few or many rows, spinous-pointed. Receptacle honeycombed or deeply pitted. Filaments smooth. Achenes mostly silky or pubescent, rarely glabrous. Pappus-scales 2-seriate, lanceolate or subulate, acute or very much acuminate, serrate-fimbriate, or ciliate-serrulate, or entire.—*Fl. Cap.* iii. p. 501.

Herbs, often thistle-like, or small shrubs. Leaves rigid, alternate or opposite, more or less ciliate or spinous-toothed. Heads solitary or terminal.—25 species, dispersed.

### 140. **DIDELTA**, L'Hér.

Heads mostly radiate; rays neuter; disk-flowers 5-toothed, bisexual. Involucral scales concrete at base, in 2 rows; the scales of the rows very unequal, sometimes the outer, sometimes the inner scales largest. Receptacle honeycombed, the margins of the cells rigidly fimbriiferous. Filaments smooth. Achenes wingless. Pappus 1-seriate, paleaceous, the scales fimbriate-plumose.—*Fl. Cap.* iii. p. 510.

Small rigid shrubs or herbs, sometimes annual. Leaves opposite or alternate, entire or sinuate-toothed, unarmed or spinous. Heads terminal, solitary; flowers yellow.—5 species, dispersed.

## SUBTRIBE 2. MUTISIACEÆ. (Gen. 141–145.)

### 141. **OLDENBURGIA**, Less.

Heads many-flowered, radiate, all the flowers bisexual; corollas of disk-flowers nearly regular, very deeply 5-fid; of the ray bilabiate, the outer lip long, strap-shaped; the inner minute, 2-fid. Involucral scales unarmed, linear, acuminate or acute, several-nerved, the inner herbaceous. Receptacle nude. Corolla glabrous; filaments smooth; anthers tailed. Style glabrous, its arms very short, obtuse. Achenes turbinate, beakless. Pappus of many, shortly plumose, equal bristles.—*Fl. Cap.* iii. p. 512.

Very rigid, woody dwarf herbs or shrubs. Leaves leathery, 1-nerved, glabrous above, very hairy beneath. Heads large, purple.—3 species, dispersed.

### 142. **PRINTZIA**, Cass.

Heads radiate; rays ligulate (rarely bilabiate), female; disk-flowers regular, deeply 5-lobed; lobes revolute. Involu-



eral scales imbricate, lanceolate. Receptacle nude, honey-combed. Filaments glabrous; anthers exserted, long-tailed. Achenes beakless, oblong, villous. Pappus copious (save in *P. Huttoni*), in many rows, of shortly plumose or barbed bristles.—*Fl. Cap.* iii. p. 513; *Thes. Cap.* t. 158.

Branching, more or less tomentose shrubs. Leaves alternate, sessile, crowded, woolly beneath, mostly nude above. Heads terminal; rays white blue or purple; disk yellow.—5 species, dispersed.

#### 143. DICOMA, Less.

Heads many-flowered, discoid or radiate; rays, when present, neuter, ligulate, bilabiate or terete-tubular; disk-flowers regular, 5-parted, the lobes longer than tube; corolla generally pubescent. Involucral scales imbricate in many rows, equaling the disk, entire, acuminate, often pungent, broad or narrow. Receptacle honeycombed. Anthers with long, barbed tails; filaments glabrous. Achenes turbinate, villous, beakless, often 10-ridged. Pappus in 2 or more rows, of shortly plumose bristles.—*Fl. Cap.* iii. p. 515; *Thes. Cap.* t. 68.

Small undershrubs. Leaves alternate, entire or toothed. Heads solitary.—11 species, dispersed.

#### 144. GERBERA, Gron.

Heads many-flowered, radiate; ray-flowers in 1 or 2 rows, those of the inner row, when present, short and subtubular, of the outer bilabiate, the outer less ligulate, 3-toothed, the inner minute, 2-fid; disk-flowers subbilabiate, the outer 3-, inner 2-fid. Involucral scales oblong or lanceolate, imbricate, subherbaceous. Receptacle nude. Anthers tailed. Achenes beaked or nearly beakless. Pappus copious, of rough bristles.—*Fl. Cap.* iii. p. 519.

Stemless, perennial herbs. Leaves all radical, petioled, entire or pinnate-lobed. Scapes 1-headed. Flowers yellow or orange, the rays often coppery outside.—15 species, dispersed.

#### 145. PERDICIUM, Lag.

Heads many-flowered, discoid; marginal flowers female, 1-seriate, tubular, bilabiate, the outer lip shortly ligulate, 3-toothed, inner shorter, 2-parted, with linear lobes; disk-flowers also bilabiate, the outer lip unequally 3-toothed, inner 2-parted. Involucral scales leafy, imbricate, lanceolate, appressed. Anthers tailed. Achenes ovate-oblong, beaked; terminal callus dilated. Pappus multiseriate, of scabrous bristles, falling off with the epigynous disk or annulus.—*Fl. Cap.* iii. p. 523.

Small, stemless herbs, with the aspect of *Taraxacum*. Leaves radical, ruminate, glabrous or canous. Scapes 1-headed, short.—2 species, Western and North-Western.

GENUS OF DOUBTFUL AFFINITY.

146. **ARROWSMITHIA**, DC.

Heads many-flowered, radiate; rays ligulate, female, in 1 row; disk-flowers 5-toothed, sterile; all the corollas woolly on the tube. Involucral scales scarious, imbricate, the inner membrane-tipped. Receptacle flat, clothed with linear-setaceous fimbrials. Anthers cuspidate at base, with very slender, partly adnate, bristle-shaped tails. Style thickened upwards, its arms short, convex, obtuse, equally pubescent. Achenes without pappus, those of the ray compressed; of the disk terete, empty.—*Fl. Cap.* iii. p. 524.

A rigid, halfshrub, like a *Relbania*. Branches leafy to the summit; leaves rigid, alternate, spreading or reflexed, sessile, lanceolate, pungent, entire, with recurved edges, glabrous above, tomentose beneath. Heads terminal, sessile; flowers yellow.—Grows on the Katberg.

TRIBE 6. CICHORACEÆ. (Gen. 147–154.)

147. **HYPOCHÆRIS**, Vail.

Heads many-flowered. Involucre ovate-oblong or bell-shaped; the scales imbricate. Receptacle bearing paleæ among the flowers. Achenes glabrous, rough, with sharp points, the marginal ones (in our species) beakless, the central with a long, slender beak. Pappus 2-seriate, the outer of short bristles, the inner plumose.—*Fl. Cap.* iii. p. 525.

*H. glabra*, Linn., a common European weed, occurs apparently in a state of nature throughout the colony. Leaves radical, sinuate or runcinate, subglabrous; scapes glabrous, branched or simple.

148. **UROSPERMUM**, Scop.

Involucre campanulate, of about 8 1-seriate scales, concrete at base into a tube. Receptacle without paleæ, fimbrilliferous. Corolla hairy on the apex of tube. Achenes sessile, rough with sharp points, beaked; beak inflated at base, very long. Pappus 1-seriate, plumose.—*Fl. Cap.* iii. p. 527.

Annuals or biennials.—*P. picroides*, Desf., a weed of European origin, is common in waste ground. Leaves runcinate, toothed, the cauline with toothed ears; involucre bristly.

149. **LACTUCA**, Tourn.

Heads many- or few-flowered. Involucre cylindrical, imbricate, 2–4-seriate, calyced. Receptacles nude. Achenes flattened, wingless, abruptly produced into a slender beak.

Pappus hair-like, very soft, soon falling off.—*Fl. Cap.* iii. p. 526.

Annual or perennial, mostly glabrous. Stems much-branched, rigid. Heads generally paniced.—2 species, dispersed.

### 150. TARAXACUM, Hall.

Heads many-flowered. Involucre double, the outer scales (or calycle) small, either erect or spreading, inner 1-seriate, erect, all frequently callous-tipped. Receptacle nude. Achenes oblong, striate, muricate on the striæ or spiny near the apex, produced into a long, slender beak. Pappus pilose, multiseriate.—*Fl. Cap.* iii. p. 526.

Stemless herbs, with crowded radical, entire or runcinate, mostly glabrous radical leaves, and 1-headed, nude scapes.—*T. fulvipilis*, H., a minute species, was found on Los Tafelberg by Drege.

### 151. MICRORHYNCUS, Less.

Heads several-flowered. Involucre cylindrical, the scales membrane-edged, the outer much shorter, imbricate. Receptacle nude. Achenes 4-5-angled, subrostrate (beak very short), ribbed and furrowed, the ribs smooth or cross-ridged. Pappus copious, pilose.—*Fl. Cap.* iii. p. 527.

Glabrous perennials.—*M. Dregeanus*, DC., found at Natal, has long, trailing stems, sometimes 8-10 feet long, rooting at intervals. Leaves tufted at the nodes, obovate, denticulate; pedicels scarcely uncial, among the leaf tufts; flowers yellow.

### 152. SONCHUS, Linn.

Heads many-flowered. Involucre imbricate. Achenes wingless, compressed, beakless, longitudinally ribbed, the ribs often cross-ridged or muricate. Pappus soft, very white, of very slender, multiseriate hairs.—*Fl. Cap.* iii. p. 527.

Annuals or perennials. Leaves entire or pinnatisect, runcinate or lyrate. Flowers yellow.—4 native species, perennial; and *S. oleraceus*, the common Sowthistle of Europe, a weed everywhere.

### 153. HIERACIUM, Linn.

Heads many-flowered. Involucre ovate, often cylindrical, composed of linear, obtuse or acuminate, 2-many-seriate, imbricate scales. Receptacle nude. Achenes 5-angled, substriate, beakless, clavate oblong or fusiform. Pappus persistent, 1-seriate, rigid, of rough, often discoloured, bristles.—*Fl. Cap.* iii. p. 529.

A vast cosmopolitan genus, of which there are 2 Cape species. Leaves, in our species, chiefly radical; stem branched, several- or many-headed.

154. **ANISORAMPHUS**, DC.

Heads many-flowered. Involucre calyculate-imbricate, the scales broadly linear, the outer 2-ranked, short; inner sub-2-seriate, elongate. Receptacle nude. Achenes oblong (immature only seen), compressed, striate, beaked; beaks of the outer short, of the inner longer. Pappus pilose, multiseriate, yellowish.—*DC. Prod.* vii. p. 251.

A small plant, like a *Hieracium* or *Hypochaeris*. Radical leaves oblong, glabrous, toothed; cauline few, linear, entire. Stem 2-3-headed, glabrous below, rough with rigid, black bristles above. Involucre with similar bristles.—Found on the Windvogelberg; unknown to me.

ORDER LXXI. **CAMPANULACEÆ.**

Calyx 5-(3-10-)lobed, rarely truncate; its tube wholly or partly adhering to the ovary. Corolla monopetalous, rarely cleft nearly or quite to the base, regular or irregular; the lobes valvate or induplicate in bud. Stamens as many as the corolla-lobes, alternate with them, epigynous, free from corolla, or rarely inserted on its tube; filaments broad-based; anthers 2-celled, dehiscing lengthwise. Ovary inferior or half-inferior, 2-10-celled; ovules many or few, or rarely solitary; style simple. Fruit a capsule or berry; rarely a drupe or nut. Seeds albuminous.—Herbs or rarely shrubs, often with milky acrid juice. Leaves alternate (rarely opposite), mostly toothed, sometimes lobed or much cut, without stipules. Flowers in racemes, panicles or solitary.

Tribe 1. **LOBELIÆ.** Corolla monopetalous, irregular, 1-2-lipped, with a split or rarely an entire tube, persistent. Anthers cohering in a tube round the stigma; pollen ovoid, smooth. Style glabrous; stigma girt with a circle of hairs, mostly 2-lobed. Juice milky. (Gen. 1-9.)

Capsule 1-celled, elongate, 3-valved . . . . . 1. **GRAMMATOTHECA.**

Capsule 2-celled, 2-valved; valves septiferous,  
rarely opening by pores.

Tube of corolla cleft down one side to the base.

Corolla subregular, 5-parted or lobed.

Corolla-lobes lanceolate; 2 lower anthers  
bristle-tipped . . . . . 2. **METZLERIA.**

Corolla-lobes ovate; anthers all bearded . . . . . 3. **MONOPSIS.**

Corolla 1-labiate, 5-fid; lobes equal; 2 lower  
anthers bearded . . . . . 4. **ISOLOBUS.**

Corolla 2-labiate.

Upper lip of corolla 3-, lower 2-fid; anthers  
all bearded . . . . . 5. **PARASTRANTHUS.**

Upper lip of corolla 2-, lower 3-fid; anthers  
all, or the 2 lower bearded . . . . . 6. **LOBELIA.**

Corolla 3-parted; the 2 upper petals separate,  
clawed; 3 lower connate into a 3-fid lip;  
anthers all bearded . . . . . 7. **DOBROWSKYA.**

Tube of corolla funnel-shaped, not cleft at one side.

Corolla subregular, the 5 lobes subequal, erect. 8. ENCHYSIA.

Corolla 2-labiate, 2 upper lobes small, 3 lower larger, reflexed. . . . . 9. LAURENTIA.

Tribe 2. CAMPANULÆÆ. Corolla monopetalous (rarely 4-5-petaled), regular. Anthers separate; pollen globose, bristly. Style pubescent; stigma nude (not in a cup), mostly 2-3-5-lobed. Juice mostly milky. (Gen. 10-17.)

Capsule 2-5-celled, opening at apex; stamens free (not on corolla-tube).

Capsule opening regularly at the summit with valves.

Corolla 4-5-parted to the base or nearly so. 10. LIGHTFOOTIA.

Corolla 4-5-toothed or lobed, tubular or bell-shaped.

Corolla cylindrical, small, 5-lobed at apex.

Capsule 5-celled, cells alternate with calyx-lobes . . . . . 11. MICROCODON.

Capsule 2-celled, wholly inferior . . . 12. LEPTOCODON.

Corolla funnel- or bell-shaped, 5-lobed at apex, or semi-5-fid; capsule half-superior, 2-5-celled . . . . . 13. WAHLENBERGIA.

Capsule elongate, slender, splitting into 5 linear pieces; calyx-lobes deciduous . . . 14. PRISMATOCARPUS.

Capsule crowned by the calyx-lobes, opening by a terminal pore . . . . . 15. ROELLA.

Capsule 1-celled, with an incomplete septum; stamens free; ovules 4, basal.

Corolla with a very long, narrow tube . . . 16. MERCIERA.

Capsule 3-celled; corolla tubular; stamens on the corolla-tube.

Ovules 2 in each ovarian cell . . . . . 17. SIPHOCODON.

Ovules several in each cell . . . . . ? 18. RHIGIOPHYLLUM.

Tribe 3. CYPHIÆÆ. Petals 5, separate or partially cohering by their claws above the base, spreading more or less irregularly in the form of a labiate corolla. Anthers separate, rigid, mostly hispid at back; pollen globose. Style glabrous; stigma obtuse, simple, nude or with an imperfect indusium. Capsule 2-celled, half-superior, many-seeded, opening by valves.

Character of the tribe . . . . . 19. CYPHIA.

Tribe 4. GOODENOVIEÆ. Corolla monopetalous, irregular, the tube split in front; limb 5-parted, 1-2-lipped; lobes induplicate in bud. Anthers separate or cohering; pollen simple or compound. Style single (very rarely 2); stigma fleshy, girt with a cup-like indusium.

Corolla 1-labiate; anthers free; drupe dry or

fleshy; seeds solitary . . . . . 20. SCÆVOLA.

#### TRIBE 1. LOBELIÆÆ. (Gen. 1-9.)

##### 1. GRAMMATOTHECA, Presl.

Calyx-tube elongate, linear-triquetrous; limb 5-parted,



spreading or reflexed. Corolla tubular; tube cleft the whole length; limb 2-labiate, upper lip 2-, lower 3-lobed. Anthers all bearded. Stigma 2-lobed. Capsule linear, 3-sided, 1-celled, 3-valved, many-seeded; valves coherent above and below, 2 of them placentiferous.—*Fl. Cap.* iii. p. 532.

*G. erinoides*, found in wet places throughout the colony, is a glabrous perennial, with erect or decumbent stems, compressed above. Leaves alternate, remotely denticulate, varying from obovate to linear. Flowers axillary, blue. Ovary 4 lines to 1 inch long.

## 2. METZLERIA, Presl.

Calyx-tube hemispherical; limb 5-parted. Corolla split down the back, 5-parted, subregular; lobes lanceolate, the 3 lower connate at base, spreading, 2 upper free. Anthers subincurved, the 2 lower bristle-tipped, rarely bearded. Capsule globose, 2-valved.—*Fl. Cap.* iii. p. 532.

Small, decumbent annuals, with alternate leaves and minute, axillary, solitary flowers.—4 species, dispersed.

## 3. MONOPSIS, Salisb.

Calyx-tube obconical or hemispherical; lobes equal, linear, acute. Corolla funnel- or salver-shaped, with a cleft tube; limb rotate, 5-lobed, lobes subequal, roundish. Anthers all bearded. Stigmas 2.—*Fl. Cap.* iii. p. 534.

Small, diffuse annuals, with conspicuous, deep blue or purple flowers, on very long, slender, axillary pedicels. Anthers yellow. Leaves linear-lanceolate.—2 species, dispersed.

## 4. ISOLOBUS, A. DC.

Calyx-tube turbinate or obconical, elongate. Corolla with a split tube, 1-labiate, 5-fid; lobes equal, spreading. Anthers of the 2 lower stamens bristle-tipped. Stigma 2-lobed.—*Fl. Cap.* iii. p. 535.

Perennials. Leaves alternate, serrate. Flowers solitary, axillary or aggregated at the apex, white or purplish, small (2 lines long).—2 species, dispersed.

## 5. PARASTRANTHUS, G. Don.

Calyx 5-cleft; tube cylindrical or obconical. Corolla cleft in front, 2-labiate, upper lip of 3 lobes, lower of 2 lobes, smaller. Anthers all bearded. Stigma 2-fid. Seeds roundish, very minute.—*Fl. Cap.* iii. p. 536.

Perennials, with sessile, toothed leaves and terminal racemes of subsessile or pedicelled, yellow blue or white flowers.—3 species, dispersed.

## 6. LOBELIA, Linn.

Calyx 5-lobed; tube subconical, ovoid or hemispherical.

Corolla 2-labiate, the tube cylindrical or funnel-shaped, cleft at back; upper lip 2-lobed, often smaller, erect; lower lip spreading or pendulous, 3-fid. Two lower, or all the anthers bearded. Ovary inferior or half-superior. Capsule 2-celled, 2-valved, many-seeded, opening at the apex.—*Fl. Cap.* iii. p. 537.

Erect or procumbent herbs or small shrubs. Leaves alternate. Flowers pedicelled, mostly in terminal spikes or racemes, blue in the Cape species.—26 species, dispersed.

### 7. DOBROWSKYA, Presl.

Calyx-tube turbinate or hemispherical. Corolla split down the back, 3-parted, the 2 upper petals distinct, clawed, erect; 3 lower connate into a 3-fid lip. Filaments and anthers connate, all the anthers bearded. Stigmas 2, linear, revolute.—*Fl. Cap.* iii. p. 549.

Annual or perennial. Leaves alternate, opposite, or 3-5 in a whorl. Flowers axillary, on long pedicels, blue.—5 species, dispersed.

### 8. ENCHYSIA, Presl.

Calyx 5-fid; tube ovoid. Corolla funnel-shaped, subregular, the tube not split; lobes subequal, suberect. Two lower anthers tipped with 4 bristles.—*Fl. Cap.* iii. p. 551.

Small annuals, with racemose, white or purplish flowers.—*E. secunda*, Sond., a native of the Western district, is our only species.

### 9. LAURENTIA, Mich.

Calyx 5-fid or 5-toothed. Corolla-tube not split, cylindrical, straight; limb 2-labiate, 2 upper lobes smaller, erect, lower lip larger, 3-lobed, reflexed. Filaments free at base, connate in the middle; anthers included, glabrous, the 2 lower only tipped with hairs or bristles. Capsule ovoid, inferior. Seeds minute.—*Fl. Cap.* iii. p. 552.

Small, glabrous herbs, with blue or whitish flowers, on terminal or axillary pedicels.—4 species, dispersed.

## TRIBE 2. CAMPANULÆ. (Gen. 10-17.)

### 10. LIGHTFOOTIA, L'Hér.

Calyx 5-cleft. Corolla 5-parted to the base, or rarely deeply 5-fid. Filaments broad, ciliated; anthers free, caducous. Ovary 3-, rarely 5-2-celled; style thicker upwards; stigmas 2-3-5, short. Capsule mostly half-superior, 2-5-celled, opening by apical valves; cells (when 5) opposite the calyx-lobes.—*Fl. Cap.* iii. p. 554.

Small shrubs, rarely herbs or annuals. Leaves sometimes opposite,

usually with tufts of smaller ones in the axils, sessile, small. Flowers mostly racemose, white or blue.—25 species, dispersed.

### 11. MICROCODON, A. DC.

Calyx 5-cleft; tube ovoid or spherical. Corolla 5-lobed at the apex, small, cylindrical. Stamens free; filaments very slender, not broad-based. Style filiform; stigmas 5. Capsule 5-celled, half-superior, opening by 5 valves at top; cells alternating with the calyx-lobes.—*Fl. Cap.* iii. p. 564.

Small annuals. Leaves alternate or subopposite; small, narrow, upper ones longest. Flowers terminal, sessile or pedicelled, small.—4 species, dispersed.

### 12. LEPTOCODON, Sond.

Character of *Microcodon*, except: Capsule quite inferior, 2-celled.—*Fl. Cap.* iii. p. 584.

A small annual with the aspect of *Microcodon*.

### 13. WAHLENBERGIA, Schrad.

Calyx 5-3-fid. Corolla 5-3-lobed at the apex, rarely 5-cleft to the middle, funnel-shaped bell-shaped or tubular. Stamens 5-3, free; filaments broad at base. Style included, pilose above; stigmas 5-2. Capsule 5-3-2-celled, opening by as many apical valves; valves septiferous in the middle; cells, when 5, opposite the calyx-lobes.—*Fl. Cap.* iii. p. 566.

A very large, widely-dispersed genus, chiefly from the Southern hemisphere. Annual or perennial herbs, rarely halfshrubs. Leaves rarely opposite, generally more numerous and larger in the lower half of stem. Peduncles forked, often long, terminal or axillary; pedicels slender. Flowers drooping, mostly blue; capsules erect.—46 Cape species, dispersed.

### 14. PRISMATOCARPUS, L'Hér.

Calyx 5-lobed; tube cylindrical, narrow, elongate, 5-nerved, the nerves alternating with the lobes. Corolla funnel-shaped, rarely bell-shaped, or with a cylindrical tube, 5-lobed or 5-fid. Ovary quite inferior, 2-celled. Base of the style persistent; stigmas 2. Capsule cylindrical or 5-angled, 2-celled, bursting first at the apex; then the calyx-lobes falling off, splitting from top to bottom into 5 narrow segments.—*Fl. Cap.* iii. p. 585.

Rigid undershrubs or herbs, with alternate narrow leaves. Flowers terminal, solitary or 2-3 together, sessile or subsessile.—14 species, dispersed.

### 15. ROELLA, Linn.

Calyx 5-fid; tube cylindrical or ovoid-oblong. Corolla

funnel-shaped, tubular or bell-shaped, ample, 5-lobed. Ovary 2-celled; stigmas 2, thick. Capsule cylindrical, 2-celled, quite inferior, topped by the persistent, perforated base of the style as by an operculum, at length opening at the apex by an ample orifice, without valves. Seeds scabrous, large.—*Fl. Cap.* iii. p. 591.

Rigid undershrubs or herbs, all South African. Leaves crowded, mostly narrow, rigid, with axillary leaf-tufts. Flowers sessile, terminal or rarely fascicled.—11 species, dispersed.

### 16. **MERCIERA**, A. DC.

Calyx 4-5-cleft; tube ovoid. Corolla tubular, 4-5-lobed; tube very narrow. Stamens 4-5, free; filaments very slender at base, much longer than the anthers. Ovary inferior, with an incomplete septum, 1-celled; ovules 4 (or 2?) in the bottom of the ovary. Style filiform, usually exserted, glabrous; stigmas 2, very short. Capsule unknown.—*Fl. Cap.* iii. p. 595.

Small undershrubs, with the aspect of *Roella ciliata*. Branches very leafy. Leaves sessile, linear-subulate, rigid, ciliate, with axillary leaf-tufts. Flowers sessile, axillary; corollas very long and narrow.—2 species, both Western.

### 17. **SIPHOCODON**, Turcz.

Calyx 5-parted; tube ovoid. Corolla tubular, 5-lobed at apex; tube narrow. Stamens 5; filaments short, inserted in the middle of the tube of the corolla; anthers longer than the filaments. Ovary circumscissile below the calyx-lobes, 3-celled; cells 2-ovuled; stigmas 3, revolute. Capsule opening across, the upper part falling off, the cup-like remains 3-celled; cells 1-seeded.—*Fl. Cap.* iii. p. 596.

A slender, glabrous halfshrub, like a *Thesium*. Leaves alternate, linear, minute, scale-like, appressed. Flowers blue, shortly peduncled, racemose, racemes often paniced.—Found in Caledon.

#### DOUBTFUL GENUS.

### ? 18. **Rhigiophyllum**, Hochst.

Calyx 5-parted; lobes longer than the ovoid tube. Corolla tubular, very slender and long, 5-lobed at apex. Stamens 5, subincluded; filaments inserted on the corolla-tube below the throat. Ovary inferior, 3-celled; cells with many ovules; style filiform, exserted; stigmas 3-lobed, recurved. Capsule 3-celled (ripe not known).—*Fl. Cap.* iii. p. 597.

A rigid, small shrub, like a *Roella*. Leaves imbricate, squarrose, entire. Flowers capitate.—Found near Elin, Zwellendam, by Krauss.

#### TRIBE 3. CYPHIÆ.

### 19. **CYPHIA**, Berg.

Calyx-tube turbinate, adhering to the ovary; limb 5-parted,

the segments subequal. Petals 5, their claws conniving in a split tube or slightly cohering above or below; limbs subequal, spreading as a 2-lipped corolla. Stamens 5; filaments pilose; anthers free, often hispid at back. Ovary inferior or half-inferior, 2-celled, many-ovuled; style simple; stigma with an obsolete, ciliate indusium. Capsule 2-celled, many-seeded.—*Fl. Cap.* iii. p. 597.

Erect or climbing perennial herbs, mostly with succulent or tuberous, edible roots. Leaves alternate, undivided or pinnate-parted or lobed. Flowers blue white or pink.—20 species, dispersed.

#### TRIBE 4. GOODENOVIÆ.

##### 20. SCÆVOLA, Linn.

Calyx-tube adnate with the ovary; limb 5-parted or 5-toothed, or nearly entire. Corolla longitudinally cleft down one side and opened out into a 1-labiate or secund, 5-lobed limb, the lobes winged at the sides. Anthers free. Stigma with a ciliate indusium. Drupe fleshy or dry, crowned by the calyx-lobes, 1-4-celled; cells 1-seeded.—*Fl. Cap.* iii. p. 604.

A large but chiefly Australian genus of varied habit.—*S. Thunbergii*, E. and Z., our only species, is a seacoast shrub, with obovate, obtuse, fleshy, glabrous leaves, and axillary, short, forked peduncles.—Found along the South and South-Eastern coasts.

### ORDER LXXII. ERICACEÆ.

#### Tribe ERICEÆ.

Flowers 4-parted. Corolla marcescent, monopetalous, either bell-shaped globose ovoid tubular or salver-shaped, 4-lobed. Stamens 4-8, hypogynous; anthers usually connate before the flowers open, opening by pores, or rarely slitting. Ovary free, 1-2-4-, very rarely 8-celled; ovules 1 or many in each cell. Fruit dry, mostly capsular and dehiscent.—Small shrubs or undershrubs, with entire, evergreen, small, usually narrow and very generally whorled leaves.—The “Heaths.”

Subtribe 1. EUERICEÆ. Ovary 4-8-celled; ovules 2 or more in each cell.

Stamens 8 (very rarely 6-7).

Sepals 4, in opposing pairs, much longer than the deeply 4-lobed corolla . . . . . 1. MACNABIA.

Calyx equally 4-parted or rarely 4-fid; corolla very variable in size and shape, but rarely (and then not greatly) shorter than the calyx . . . . . 2. ERICA.

Calyx unequally 4-fid or parted, one sepal larger, frequently revolute; corolla minute . . . . . 3. PHILIPPIA.



Stamens 4.

Calyx 4-parted, one lobe larger; corolla bell-shaped, deeply 4-fid . . . . . 4. ERICINELLA.

Calyx subequally 4-parted; corolla tubular or ovoid, limb shortly 4-fid . . . . . 5. BLÆRIA.

Subtribe 2. SALAXIDÆ. Ovary 1-4-celled; cells 1-ovuled.

Stamens 8 (rarely 6-7).

Calyx equally 4-fid or parted; stigma obtuse, slender or capitate . . . . . 6. EREMIA.

Calyx unequally 4-fid, one segment larger; stigma very large and peltate . . . . . 11. SALAXIS.

Stamens 4 (rarely 3).

Stigma obtuse.

Calyx equally 4-cleft or parted . . . . . 7. GRISEBACHIA.

Calyx thick or thickish, ovate-campanulate, 4-toothed, rarely semi-4-fid; corolla 4-fid . . . . . 8. SIMOCHEILUS.

Calyx thickish, either compressed and 2-lobed, or tubular and 4-toothed; corolla 2-fid! . . . . . 9. SYMPIEZA.

Stigma cup-shaped or peltate . . . . . 10. SCYPHOGYNE.

## 1. MACNABIA, Lehm. and Benth.

Calyx 4-parted; sepals cartilaginous, opposed in pairs, the 2 outer keeled, 2 inner flattish. Corolla much shorter than the calyx, deeply 4-fid. Stamens 8, free; anthers slender, 2-parted, muticous, opening by a longitudinal slit. Ovary 4-celled; ovules several; style uncinatè; stigma obtuse. Capsule 4-angled, 4-celled, loculicidal. Seeds membrane-winged.—*DC. Prod.* vii. p. 612.

*M. montana*, Lehm., is a glabrous, rigid shrub, found in Uitenhage (not "near Capetown"). Leaves 3 in a whorl; flowers on the ends of short twigs, disposed along the rod-like branches, white.

## 2. ERICA, Linn.

Calyx equal, either 4-parted or 4-fid. Corolla tubular, salver-shaped, ovoid bell-shaped or globose, 4-lobed. Stamens 8 (rarely 6-7) on a glandular, hypogynous disk; filaments free or rarely monadelphous; anthers terminal or sub-lateral, either muticous or crested or tailed at the insertion of the filament, opening by short or longer terminal pores. Ovary 4 (very rarely 8-celled); cells 2- or many-ovuled; stigma various. Capsule 4-celled, loculicidal.—*DC. Prod.* vii. p. 613.

A vast genus of over 400 species, the greater number of which are South African, and well known in European gardens as "Cape Heaths." Though several species are dispersed, and some (as *E. cerinthoides*) occur from Capetown to Natal, the great bulk are found to the westward of Uitenhage, very many of the finest occurring in George and Swellendam. They usually grow on sandstone or in sand, and many are limited to very small areas.

## 3. PHILIPPIA, Kl.

Calyx 4-fid or -partite, one sepal larger, often revolute. Corolla small, subglobose. Stamens 8; filaments connate or free; anthers muticous, connate or conniving. Ovary 4-celled, the cells several-ovuled; stigma peltate. Capsule 4-valved.—*DC. Prod.* vii. p. 695.

Leaves 3-6 in a whorl; flowers minute, ternate, umbellate or capitate; bracts 0.—There are 2 Cape species. They resemble species of *Salaxis*, or of the subsection *Arsace* in the genus *Erica*.

## 4. ERICINELLA, Kl.

Calyx 4-parted, lowest sepal larger. Corolla bell-shaped; limb 4-lobed, suberect. Stamens 4, rarely 5, free. Ovary 3-4-celled, cells many-ovuled; stigma peltate.—*DC. Prod.* vii. p. 697.

*E. multiflora*, Kl., the only Cape species, found on the Winterberg, has tailed anthers. As a genus this does not differ from *Blæria*, except by the unequal calyx.

## 5. BLÆRIA, Linn.

Calyx 4-parted, subequal. Corolla ovoid-bellshaped or tubular, shortly 4-fid or toothed. Stamens 4, free. Ovary 4-celled, cells several-ovuled; stigma obtuse or peltate.—*DC. Prod.* vii. p. 697.

Small heath-like shrubs; leaves 2-3-4 in a whorl; flowers terminal, umbellate or capitate; bracts 3. Only differs from *Erica* by the number of stamens.—9 species, chiefly west of George.

## 6. EREMIA, Don.

Calyx equal, deeply 4-fid or partite. Corolla ovoid-bell-shaped or globose; limb 4-fid. Stamens 6-8 (rarely 5). Ovary 2-4-celled, cells 1-ovuled; stigma obtuse, slender or capitate. Capsule 1-4-celled.—*DC. Prod.* vii. p. 699.

Heath-like shrubs; leaves 3-4 in a whorl, often squarrose or hispid. Flowers terminal, glomerate or umbellulate, small; bracts 3.—7 species, chiefly Western.

## 7. GRISEBACHIA, Kl.

Calyx equally 4-fid or -partite. Corolla ovoid-bellshaped or subtubular, 4-fid. Stamens 4 free; filaments either hispidulous or glabrous; anthers lateral or terminal. Ovary 2-4-celled, cells 1-ovuled; stigma obtuse. Capsule abortively 1-3-celled.—*DC. Prod.* vii. p. 700. Also *Acrostemon*, Kl.; *DC. l. c.*, p. 702.

Small shrubs, resembling the *Eremiæ*, differing in the number of stamens. Flowers terminal, capitate. Leaves and calyces hairy, with simple or plumose hairs.—16 species, west of George.

8. **SIMOCHEILUS**, Kl. and Benth.

Calyx thickened (or rarely thinnish), sometimes very thick, tubular-bellshaped or turbinate, 4-toothed or rarely semi-4-fid. Corolla ovoid or obovate-tubular, 4-fid. Stamens 4, free; filaments glabrous; anthers terminal or lateral. Ovary 1-2-4-celled, cells 1-ovuled; stigma obtuse. Capsule 2-4- or 1-celled, dehiscent or indehiscent.—*DC. Prod.* vii. p. 702. *Also* *Syndesmanthus*, *Kl.*, *DC. l. c.* p. 706, *and* *Codonanthemum*, *Kl.*, *DC. l. c.* p. 707.

Small shrubs; leaves 3-4 in a whorl, often hispid. Flowers terminal, capitate.—28 species, dispersed.

9. **SYMPIEZA**, Licht.

Calyx thickish, either compressed and 2-lobed, or tubular-bellshaped and 4-toothed. Corolla obovate or tubular-club-shaped, oblique, the limb 2-fid, conniving. Stamens 4, free; anthers terminal, muticous. Ovary 2-celled, cells 1-ovuled; stigma obtuse. Capsule 2-1-celled.—*DC. Prod.* vii. p. 705.

Leaves 3 in a whorl; flowers capitate, small. Readily known by the corolla.—There are 5 species, in Worcester and Swellendam.

10. **SCYPHOGYNE**, Brongn.

Calyx more or less deeply 4-fid or 4-toothed, equal or the lowest segment larger or more free. Corolla small, ovoid, oblong, globose or cup-like, 4-fid. Stamens 3-4, free or monadelphous; anthers muticous. Ovary 1-4-celled; ovules solitary; stigma expanded cup-like or peltate. Capsule 1-4-celled.—*DC. Prod.* vii. p. 709. *Also* *Coilostigma*, *Kl.*, *DC. l. c.* 708, *and* *Codonostigma*, *Kl.*, *DC. l. c.* 709.

Small or very small heath-like shrubs. Leaves 3 in a whorl. Flowers minute, in terminal heads or subsessile in the upper axils.—14 species, dispersed.

11. **SALAXIS**, Salisb.

Calyx 4-fid, one segment larger or more free. Corolla small, subglobose; limb shortly 4-fid. Stamens 6-8; filaments free or monadelphous. Ovary 1-4-celled, cells 1-ovuled; stigma large, peltate. Capsule 1-4-celled, indehiscent or separating into 1-seeded carpels.—*DC. Prod.* vii. p. 710. *Also* *Lagenocarpus*, *Kl.*, *DC. l. c.*

Shrubs resembling *Philippia*, but differing in the solitary ovules. Flowers small and green. Leaves 3 in a whorl.—12 species, all Western.

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## ORDER LXXIII. JASMINEÆ.

Flowers mostly bisexual, rarely apetalous or polypetalous. Calyx monophyllous. Corolla regular, 4- or many-lobed. Stamens 2, on the corolla-tube. Ovary free, 2-celled; ovules definite; style 1. Fruit either a double berry, a drupe, or a capsule.—Trees or shrubs, rarely herbaceous, with opposite, entire or pinnate leaves.

Suborder 1. **Oleineæ**. Corolla valvate in bud, sometimes polypetalous. Ovules pendulous. Seeds pendulous, with copious albumen.

Corolla with a short tube and 4-parted limb . . . . . 1. **OLEA**.

Suborder 2. **Jasmineæ**. Corolla twisted, imbricate in bud. Ovules erect. Seeds erect, with little or no albumen.

Shrubs. Corolla salver-shaped. Stamens included. Fruit a twin berry . . . . . 2. **JASMINUM**.

Shrubs. Corolla salver-shaped. Stamens exserted. Fruit a woody capsule, splitting lengthwise . . . . . 3. **SCHREBERA**.

Small undershrubs. Corolla funnel-shaped. Fruit of 2 globose, membranous capsules, splitting across . . . 4. **MENODORA**.

1. **OLEA**, Tourn.

Calyx short, 4-toothed. Corolla with short tube and 4-parted, spreading limb. Stamens 2, inserted at the base of corolla-tube, shortly exserted. Ovary 2-celled; style short; stigma 2-fid or subcapitate. Drupe fleshy, with a bony, mostly 1-seeded stone.—*DC. Prod.* viii. *p.* 283.

The Olive.—6 or 8 species, dispersed.

2. **JASMINUM**, Tourn.

Calyx tubular, 5-8-lobed parted or toothed, or subentire. Corolla salver-shaped, with a long tube and 5-8- or more-parted, spreading limb. Stamens 2, included. Ovary 2-lobed; style simple, 2-lobed. Berry didymous; cells 1-seeded.—*DC. Prod.* viii. *p.* 301.

The Jasmine. Leaves simple or pinnate. Flowers white or yellow.—5 or 6 species, Eastern or at Natal.

3. **SCHREBERA**, Roxb.

Calyx cup-shaped, subentire or toothed. Corolla salver-shaped, with a long tube and 5-7-parted, spreading limb. Stamens 2, shortly exserted. Ovary 2-lobed; style simple, 2-lobed. Capsule thick and woody, obovate, loculicidal, splitting into 2 boat-shaped valves. Seeds with an oblong, membranous wing.—*DC. Prod.* viii. *p.* 674; *Thes. Cap. t.* 163.

*S. Saundersiæ*, H., our only species, is a beautiful jasmine-like shrub, with

sweet-scented flowers and pinnate leaves; occurs in several parts of the Natal colony. The only other known species is Indian.

#### 4. **MENODORA**, H. B. K.

Calyx bell-shaped, deeply 5-10- or many-cleft, with narrow lobes. Corolla shortly funnel-shaped, with a terete tube, mostly hairy within; limb 5-parted, imbricate in bud. Stamens 2, exserted. Style filiform; stigma subcapitate; ovary 2-lobed; ovules 2-4 in each cell. Capsule didymous, cartilaginous, each carpel opening by a transverse slit.—*DC. Prod. viii. p. 316 (including Bolivaria, p. 315); Hook. Ic. Plant. t. 586.*

Undershrubs, natives of South America and Mexico, as well as of the Northern and North-Eastern frontiers of the Cape colony.—We have 2 species: *M. Africana*, Hook., a much-branched, diffuse plant, with multifid leaves; and *M. juncea*, Harv. (n. sp.), an erect, nearly leafless, virgate plant, flowering at the ends of the branches.

### ORDER LXXIV. **SALVADORACEÆ?**

#### 1. **MONETIA**, L'Hér.

Flowers diœcious.—Male: Calyx shortly 4-5-cleft, valvate in bud. Petals 4-5, hypogynous, linear-lanceolate, longer than the calyx, valvate in bud. Stamens 4-5, alternate with the petals, inserted into the margin of a fleshy, hypogynous disk; filaments subulate; anthers versatile, 2-celled.—Female: Calyx and corolla as in the male. Stamens abortive. Ovary free, 2-celled; ovules solitary, erect or ascending; stigma sessile, globose. Berry 1-2-seeded. Seeds exalbuminous, with a green embryo and fleshy, strongly cordate cotyledons.—*Fl. Cap. i. p. 474.*

*M. barlerioides*, L'Hér., the only species, occurs in Uitenhage. It is a glabrous shrub, with opposite branches and twigs. Leaves opposite, petioled, with axillary, solitary or 2-nate spines. Flowers small and greenish, in dense axillary tufts.—Its true place in the system is extremely doubtful. I place it here at the suggestion of Dr. Hooker.

### ORDER LXXV. **MYRSINEÆ.**

Flowers bisexual or polygamous, small. Calyx 4-6-toothed or cleft, free or half-adnate to the ovary. Corolla mostly monopetalous, regular, 4-6-lobed or parted, rarely of 4-5 petals; lobes mostly twisted to the left in bud. Stamens as many as the lobes of corolla and opposite them, fertile (sometimes alternating with as many petaloid staminodia). Ovary



free or half-inferior, 1-celled; ovules sunk in a fleshy, central placenta. Fruit indehiscent, usually drupaceous, with a thin flesh.—Trees or shrubs, with alternate, simple, mostly entire, petioled, exstipulate leaves. Often resiniferous.

Ovary half or wholly inferior. Corolla 5-lobed . . . . 1. *MÆSA*.

Ovary quite free.

Petals 5, separate . . . . . 2. *EMBELIA*.

Corolla 4-5-lobed . . . . . 3. *MYRSINE*.

### 1. *MÆSA*, Forsk.

Flowers polygamous. Calyx adnate, 2-bracted at base, 5-lobed. Corolla rotate, 5-lobed, the lobes short, blunt, twisted or imbricate in bud. Stamens 5, included; anthers cordate. Ovary inferior or half-inferior; style short; stigma capitate. Berry concrete with the calyx, ovoid. Seeds numerous.—*DC. Prod.* viii. p. 77; *Thes. Cap. t.* 129.

Asiatic or African shrubs or trees.—2 Cape species, both from Caffraria and Natal.

### 2. *EMBELIA*, Burm.

Calyx 5-parted or coarsely 5-toothed. Petals 5, imbricate or twisted. Stamens 5, each connate with the base of the opposing petal; anthers much shorter than the filament, ovoid. Ovary ovoid or depressed; style short; stigma obtuse or capitate; ovules 4-1, often abortive, attached to the bottom of the ovarian cavity. Drupe globose, 1-seeded.—*DC. Prod.* viii. p. 83; *Thes. Cap. t.* 127.

Shrubs or small trees, often climbing. Flowers racemose or paniced, small. Leaves entire.—*E. Kraussii*, the only Cape species, occurs near Natal.

### 3. *MYRSINE*, Linn.

Flowers polygamous. Calyx 4-5-fid. Corolla subrotate, 4-5-parted. Stamens 4-5; filaments very short, inserted at the base of the corolla; anthers erect, lanceolate, longer than the filament. Ovary globose; style short; stigma capitate; ovules 4-5, imbedded in a spherical placenta, peltate. Drupe globose, with a hard seed.—*DC. Prod.* viii. p. 92.

Small shrubs or trees.—3 or more Cape species, dispersed. *M. Africana*, a small twiggy shrub, with myrtle-like leaves, is common everywhere.

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## ORDER LXXVI. PRIMULACEÆ.

Flowers bisexual. Calyx 4-5-lobed, persistent, free or half-adnate. Corolla regular, 4-5-lobed (or rarely 5-petaled), rarely 0. Stamens 4-5, inserted on the tube of corolla, 1 oppo-

site each lobe. Ovary free or half-inferior, 1-celled; ovules on a fleshy central placenta, peltate; style 1. Capsule 1-celled, opening by teeth or valves, or splitting across the middle into 2 halves.—Herbaceous plants, very rarely slightly ligneous at base; known from *Myrsineæ* by habit and the capsular fruit. The “Primrose” and “Auricula,” and many more spring flowers of English gardens, are of this Order.

Ovary quite free. Calyx and corolla deeply 5-parted.

Stamens glabrous. Capsule opening at top by 5–10 valves . . . . . 1. *LYSIMACHIA*.

Stamens hairy. Capsule splitting across into 2 hemispheres . . . . . 2. *ANAGALLIS*.

Ovary half-inferior. Corolla salver-shaped, its 5 lobes alternating with 5 scales in the throat . . . . . 3. *SAMOLUS*.

### 1. *LYSIMACHIA*, Linn.

Calyx 5-parted. Corolla subrotate or bell-shaped, 5-parted, longer than the calyx. Stamens 5, at the base of the corolla. Capsule globose, opening at the apex by 5–10 valves, many-seeded.—*DC. Prod.* viii. p. 60.

A large genus, chiefly of the Northern hemisphere.—*L. nutans* (*Lubinia atropurpurea*, V.), our only species, grows in the Eastern district. It is a glabrous, subsimple herb, with lanceolate, entire leaves and a terminal raceme of handsome, tubular-bellshaped, nodding, dark purple flowers.

### 2. *ANAGALLIS*, Tourn.

Calyx 5-parted. Corolla rotate or bell-shaped, longer than the calyx, very deeply 5-parted. Stamens 5, inserted at the base of the corolla; filaments bearded. Capsule globose, splitting across the middle into hemispherical halves, many-seeded.—*Fl. Cap.* iii. p. 69; *Thes. Cap.* t. 4.

Small annuals or perennials, mostly diffuse. Leaves opposite or alternate. Flowers bright scarlet rosy purple or white, opening in sunshine. The “Pimpernel,” or “Poor Man’s Weather-glass,” a weed naturalized from Europe, is common. There are also 2 or 3 perennial African species in the Eastern district and at Natal.

### 3. *SAMOLUS*, Linn.

Calyx half-inferior, 5-fid. Corolla salver-shaped or bell-shaped; limb 5-parted, with 5 alternating scales crowning the tube. Stamens 5, inserted in the base of the corolla; anthers basifixed. Ovary half inferior, many-seeded. Capsule opening at top by 5 valves.—*DC. Prod.* viii. p. 72.

Herbs, found chiefly on muddy seashores. Flowers white, small.—2 Cape species, dispersed.

ORDER LXXVII. **PLANTAGINEÆ.**

Sepals 4-3, persistent, imbricate. Corolla tubular, scarious, persistent, with a 4-3-parted limb. Stamens 4, inserted in the base of the corolla-tube, alternate with its lobes. Ovary free, 2-4- rarely 1-celled; ovules 1 or many; style simple; stigma hispid, filiform, simple, rarely 2-fid. Fruit a pyxidium (membranous, transversely slitting), enclosed within the dry corolla. Seeds albuminous.—Herbs, with small, spiked flowers, and radical or scattered leaves. Astringent and mucilaginous.

1. **PLANTAGO**, Linn.

Flowers spiked. Calyx 4-parted. Corolla tubular, with a 4-parted limb. Stamens 4, much exserted, slender. Style simple. Fruit 2- or many-seeded.—*DC. Prod.* xiii. p. 693.

The Cape species of this cosmopolitan genus have radical leaves and scapes.—Species dispersed.

ORDER LXXVIII. **SAPOTEÆ.**

Flowers bisexual. Calyx divided, persistent. Corolla regular, with as many or twice as many lobes as the calyx. Fertile stamens as many as the corolla-lobes and opposite them, or twice as many; anthers 2-celled, mostly extrorse, often taper-pointed; sterile stamens petaloid, frequently present. Ovary free, of several cells; style 1; ovules solitary, axile. Fruit a drupe or berry. Seeds with or without albumen.—Trees or shrubs, mostly tropical, with milky-juice, leaves alternate, entire, penninerved; stipules 0. Flowers axillary, solitary or tufted or umbelled. Fruit often edible.

Corolla 5-lobed or parted. Stamens 5 and 5 barren . . . . .

1. **SIDEROXYLON**.

Corolla 12-24-parted or lobed.

Corolla-lobes in 1 row; anthers shorter than filament . . . . .

2. **LABOURDONNAISIA**.

Corolla-lobes in 2 rows; anthers longer than filaments; sterile stamens alternating with fertile . . . . .

3. **MIMUSOPS**.

1. **SIDEROXYLON**, Linn.

Calyx 5-parted, imbricate. Corolla semi-5-fid, 5-fid, or nearly 5-parted; the lobes spreading, imbricate in bud. Stamens inserted in the tube of corolla; 5 sterile, petaloid, included; 5 fertile opposite the lobes; the anthers ovate, obtuse, shorter than the filament. Ovary hairy, mostly 5-celled (4-2-celled); style rather longer than the ovary. Fruit berried, ovoid or globose.—*DC. Prod.* viii. p. 177.

*S. inerme*, Linn., called "Melkhout," is common throughout the colony. Flowers small, axillary.

## 2. LABOURDONNAISIA, Boj.

Calyx 6-parted; lobes 2-seriate, the æstivation of each row valvate. Corolla 12-17-parted; lobes 1-seriate, reflexed, linear, entire, imbricate in bud. Stamens as many as the corolla-lobes, all fertile; filaments slender; anthers lanceolate-mucronulate, cordate at base, shorter than the filament. Ovary subglobose, hairy, 6-celled; style cylindrical. Berry leathery, full of milky juice, globose or ovoid, 1-seeded.—*DC. Prod.* viii. p. 194.

Chiefly Mauritian trees. A species has recently been found at Natal by Mr. Gerrard.

## 3. MIMUSOPS, Linn.

Calyx 6-8-parted, the lobes 2-seriate. Corolla 18-24-parted; tube short; lobes thrice as many as those of the calyx, linear, in 2 rows; those of the outer row 12-16, two opposite each calycine lobe; of the inner 6-8, one opposite each calycine lobe. Stamens inserted in the corolla-tube; the fertile as many as the inner corolla-lobes and opposite them; filaments short; anthers lanceolate-sagittate, longer than the filament, the sterile alternating with the fertile, ovate, acute or acuminate, hairy at back. Ovary 6-8-celled, hairy; style cylindrical. Berry globose or oblong, 1-2-seeded.—*DC. Prod.* viii. p. 201.

Trees and shrubs, with leathery, shining leaves and tufted, axillary, white, often fragrant flowers.—3 or 4 species in Caffraria and Natal.

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## ORDER LXXIX. EBENACEÆ.

Flowers diœcious or rarely bisexual. Calyx 3-7-lobed, persistent. Corolla regular, 3-7-lobed, often externally silky, twisted, imbricate in bud. Stamens inserted at the base of the corolla, or hypogynous, 6 or many, separate or connate in pairs opposing each lobe of corolla; filaments short; anthers basifixed, introrse, linear-lanceolate. Ovary free, 3-12-celled; ovules solitary or in pairs; styles separate or united. Berry globose or ovoid, often few-seeded. Seeds albuminous.—Trees and shrubs of hot countries, without milky juices. Leaves alternate or subopposite, entire, exstipulate. Cymes or racemes axillary or terminal.

Flowers bisexual, 5-lobed. Stamens 10 . . . . . 1. ROYENA.  
Flowers diœcious.

Calyx and corolla 4-7-lobed or cleft.

- Female flowers wholly without stamens, racemose . . . 2. EUCLEA.  
 Female flowers with 8 abortive stamens, solitary . . . 3. DIOSPYROS.  
 Calyx cup-like. Corolla 3-fid. Flowers solitary, sessile . . . 4. MABA.

### 1. ROYENA, Linn.

Flowers bisexual or polygamous. Calyx 5-parted, rarely 5-lobed, pubescent, frequently enlarged after flowering. Corolla 5-fid, bell-shaped; the lobes obtuse, twisted to the left. Stamens 10, attached to the base of the corolla, 2 placed before each corolla-lobe in 1 row; filaments short; anthers linear-lanceolate, often hispid. Glands 10, round the base of the ovary. Ovary hairy, when fertile 4-10-celled; when barren of fewer cells; style 2-5-lobed. Berry leathery.—*DC. Prod.* viii. p. 210.

Shrubs, all South African. Leaves alternate, entire; peduncles axillary, mostly 1-flowered; flowers greenish-yellow, turning black in drying.—17 species, dispersed.

### 2. EUCLEA, Linn.

Flowers diœcious; female without stamens; male with a rudimentary ovary. Calyx 4-7-lobed, not enlarging. Corolla 4-7-lobed, bell-shaped, longer than the calyx; lobes obtuse, twisted to the left. Stamens 10-32 (the number variable in the same species), inserted at the base of corolla; anthers lanceolate, longer than the filaments. Ovary 4-celled; styles 2, 2-lobed, glabrous. Berry globose, by abortion 1-celled, 1-seeded.—*DC. Prod.* viii. 215.

Cape shrubs, with alternate or opposite leaves, often undulate, glabrous or pubescent, and axillary, racemose, white flowers.—15 species, dispersed.

### 3. DIOSPYROS, Linn.

Flowers diœcious. Calyx 4-6-lobed or rarely irregularly cleft. Corolla tubular or bell-shaped, 4-6-fid; lobes twisted to the left. Stamens, in the males, 8-50, often 16, inserted at base of corolla, or partly on the torus; filament shorter than the linear-lanceolate anther; in the female flower mostly 8, barren. Ovary in female 4-8- or 10-12-celled, in males abortive; styles 2-4, connate at base, mostly 2-lobed. Berry globose or ovoid, covered by the mostly enlarged calyx, 4-8-celled.—*DC. Prod.* viii. p. 222.

Trees of hot countries, with very hard, heavy, dark-coloured wood, of which Ebony is a well-known example.—*D. Capensis*, A. DC., has elliptical, glabrous leaves; solitary or ternate, sessile male flowers, a bell- or cup-shaped slightly lobed calyx, and a deeply 5-fid corolla twice as long as the calyx. Locality not known.



## 4. MABA, Forst.

Flowers diœcious. Calyx cup-like, either entire semi-3-fid or 3-fid. Corolla urceolate or bell-shaped, 3-fid; lobes twisted to the left. Male: Stamens 3-6, sometimes 9-12, connate in pairs, hypogynous, surrounding the abortive ovary; filaments slender; anthers linear, often apiculate.—Female: Stamens 0 or 6-7, abortive, on the corolla-tube. Ovary 3-celled; cells 2-1-seeded; stigma 3-parted. Berry ellipsoid, rarely globose, smooth, 3-2-celled, not very fleshy.—*DC. Prod.* viii. p. 240; *Thes. Cap.* t. 110.

Shrubs, often growing near the sea, with alternate, small, subsessile leaves and solitary or twin axillary, sessile flowers. Corolla externally hairy.—*M. Natalensis*, H., is our only species.

## ORDER LXXX. ASCLEPIADEÆ.

Calyx 5-parted. Corolla 5-lobed, regular, valvate or twisted in bud, the throat usually provided with an appendage called the corona, which may be tubular or cup-shaped, entire or divided into distinct segments in 1 or more series, often adnate to the staminal tube, and then apparently an appendage of the anthers. Stamens 5, at the base of the corolla-tube, the short filaments usually connate in a tube (called gynostegæ) enclosing the pistil; anthers 2-celled, rarely 4-celled, opening inwards; pollen coalescing into masses (pollinia) as numerous as the anther-cells, which are 1-2-celled, pendulous, erect or horizontal, and affixed in pairs, in fours or singly to 5 stigmatic processes (corpuscles); rarely pollen in granular masses, each grain of 4 granules. Carpels 2; ovules numerous; styles 2, close together, mostly short; stigma 1, common to both styles, dilated. Follicles 2, or 1 by abortion; seeds mostly with a tuft of silky hairs at the hilum, albuminous.—Climbing or erect, shrubby or herbaceous plants, often with tuberous roots, and often with milky juices: many are leafless, with succulent stems. Leaves opposite, quite entire, without stipules.

Tribe 1. PERIPLOCEÆ. Pollen-masses 5-20, granular (4 granules to each grain), affixed singly or in fours to the dilated apex of each of the 5 corpuscles of the stigma. Filaments either free or connate.

Corolla with scales in the throat, alternating with the lobes.

Filaments of the stamens quite free.

Corolla salver-shaped; stamens in its base;  
anthers dorsally hairy, with a long, slender,  
plumose crest . . . . .

1. ECTADIUM.

Corolla subrotate or funnel-shaped; stamens

- in its throat; anthers sagittate, acute, glabrous . . . . . 2. RAPHIONACME.  
 Filaments connate; throat-scales thread-like, much longer than the corolla . . . . . 3. LEPTOPÆTIA.

Tribe 2. SECAMONEÆ. Anthers 4-celled, glabrous; filaments connate. Pollen-masses 20, very minute, erect, affixed in fours to each of the 5 corpuscles of the stigma.

- Corolla subrotate, without scales in throat; corona of 5 compressed, falcate folioles adnate to the gynostegæ . . . . . 4. SECAMONE.

Tribe 3. EUASCLEPIADEÆ. Filaments connate; anthers 2-celled. Pollen-masses 10, attached in pairs to each of the 5 corpuscles of the stigma, pendulous.

1. Corona-staminea 0.  
 Corolla bell-shaped; throat and tube without scales . . . . . 5. ASTEPHANUS.  
 Corolla urceolate; lobes very short, inflexed-valvate; tube hairy within at base . . . . . 6. HÆMAX.  
 Corolla urceolate; lobes short, twisted to the left, imbricate; tube 5-angled, with 5 prominences alternating with as many tufts of reflexed hairs . . . . . 7. MICROLOMA.
2. Corona of 5, simple, entire or 2-fid folioles, without crests or horns on their inner surface (sometimes with a short, projecting lamella).  
 Erect herbs or halfshrubs (not twiners).  
 Stigma prolonged beyond the anther-tips.  
 Corona of 5 rounded folioles. Stigma pyramidal . . . . . 8. PARAPODIUM.  
 Corona of 5 erect, fleshy, oblong, obtuse, broadly-clawed folioles. Stigma cylindrical, capitate . . . . . 9. CORDYLOGYNE.  
 Corona of 5 lanceolate-acuminate, flat, dorsally-keeled folioles. Stigma barrel-shaped . . . . . 10. KREBSIA.  
 Stigma depressed or flat, pentagonal.  
 Corona of 5 subulate, erect, keeled folioles, longitudinally furrowed on the face . . . . . 11. MACKENIA.  
 Corona of 5 cordate or oblong, flat, obtuse folioles, narrowed at base . . . . . 12. PERIGLOSSUM.  
 Corona of 5 fleshy, broad-based, ovate, roundish, oblong or strap-shaped folioles . . . . . 13. XYSMALOBIMUM.
- Twining shrubs or halfshrubs.  
 Corona of 5 oblong, tongue-shaped folioles, with narrow, reflexed margins at the base of the gynostegæ . . . . . 14. GLOSSOSTEPHANUS.  
 Corona of 5 membranous, thin, flat folioles, at the summit of the gynostegæ . . . . . 15. ONCINEMA.

3. Corona of 5, more or less concave or hooded folioles, or, if of flat or flattish folioles, then furnished on the face with tongue-shaped or horn-like crests, or prominent, longitudinal ridges.

Erect herbs or shrubs (not twiners).

Corolla bell-shaped. Corona of 5 expanded folioles, bearing on face 2 parallel longitudinal ridges . . . . . 16. *PACHYCARPUS*.

Corolla rotate, reflexed or spreading.

Corona of 5 complicate-cucullate, laterally compressed folioles, with strongly inflexed margins . . . . . 17. *GOMPHOCARPUS*.

Corona of 5 spreading, flat, oblong, obtuse, nerved folioles, having at base 2 collateral, tongue-like processes . . . 18. *FANNINIA*.

Corona of 5 broad-based folioles, having on the face a tongue-shaped process; follicles smooth . . . . . 19. *LAGARINTHUS*.

Corona of 5 broad-based folioles, each with 2 lateral, tooth-like, and a medial subulate-acuminate lobe, opposite to which latter, on the face, is a similar tongue-like process; follicles softly echinate . . . . . 20. *ASPIDOGLOSSUM*.

Corona of 5 oblong or ovate, truncate or 3-toothed or emarginate folioles, having on the face a tongue-shaped, simple 2-fid or 2-partite process; follicles softly echinate . . . . . 21. *SCHIZOGLOSSUM*.

Twining shrubs. Corona of 5 cucullate folioles, having a beak-like process on the face. Leaves deeply cordate, long-petioled 22. *PENTARRHINUM*.

4. Corona either single and cup-like, with an entire or lobed margin, or double, the outer sinuate-lobed, short, inner of 5 folioles.

Corona single, cup-like, entire, crenate or toothed.

Twining or trailing plants, with ovate or cordate leaves . . . . . 23. *CYNOCOTONUM*.

Fleshy, succulent, climbing, leafless shrubs 24. *SARCOCYPHULA*.

Corona double, the outer annular, inner of 5 folioles.

Fleshy, succulent, climbing, leafless shrubs. 25. *SARCOSTEMMA*.

Twining plants, with cordate leaves . . . 26. *DÆMIA*.

5. Corona double or triple, monophyllous, the folioles more or less concrete at base, tapering into linear or subulate points.

Corona monophyllous, 5-fid, the segments furnished on the inside with a tooth-like process . . . . . 27. *ENDOTROPIS*.

Corona triple, each of 5 folioles; 5 outer opposite the lobes of corolla; folioles of the medial row 3-fid, of the inner undivided . 28. *EUSTEGIA*.

Corona tubular; folioles concrete in 3 rows; outer 15-toothed; medial of five 3-lobed segments; inner of 5 subulate-acuminate segments. Anthers tipped with an oblong, membranous bag! . . . . . 29. FOCKEA.

Tribe 4. STAPELIÆ. Pollen-masses ascending or erect (other characters as in *Euasclepiadeæ*).

Pollen-masses opaque (without any pellucid spot).

Corona 5-parted or of 5 separate folioles.

Slender, erect herb. Corolla-lobes narrow-spathulate . . . . . 30. TENARIS.

Climbing shrubs or halfshrubs. Flowers small.

Corona of 5 acute or subacute folioles; follicles without wings . . . . . 31. TYLOPHORA.

Corona of 5 reniform folioles; follicles broadly 4-winged . . . . . 32. DREGÆA.

Corona 0. Corolla either nude or hairy within or with scales in the throat, alternating with the lobes.

Corolla with 5 tooth-like scales in the throat . . . . . 33. GYMNEMA.

Corolla without scales, hairy within . . . . . 34. RHYSSOLOBIUM.

Pollen-masses pellucid at one end, or at the inner side.

Corolla with a conspicuous tube, more or less inflated, at least at base, often flask- or pitcher-shaped.

Corolla salver-shaped. Corona bluntly 5-lobed . . . . . 35. BARROWIA.

Corolla-tube bottle- bag- or pitcher-shaped.

Corona double; outer of 5 spreading, spur-like lobes; inner of very short obtuse lobes opposite the anthers; follicles torulose . . . . . 36. RIOCREUXIA.

Corona bell-shaped in a double row, the lobes 5, 10, 15, those opposite the anthers longer; follicles cylindrical . . . . . 37. CEROPEGIA.

Corolla rotate or bell-shaped, with a short, wide tube.

Stems leafy, herbaceous or ligneous; roots mostly succulent.

Corona double, obviously in 2 rows.

Outer corolla of five 2-fid 2-dentate or 2-parted folioles; inner of 5 simple, oblong folioles; corolla-lobes mostly long and narrow . . . . . 38. DICHÆLIA.

Outer corolla bell-shaped, 10-toothed round the margin; inner of 5 subulate folioles; corolla-lobes ovate, short . . . . . 39. DECACERAS.

Corona in 1 row, of 5 pieces or lobes.

Corolla-lobes linear, reflexed. Corona-folioles acuminate, attenuate, eared at base . . . . . 40. MACROPETALUM.

Corolla widely bell-shaped. Corona-folioles shortly 3-lobed, the medial lobe longer . . . . . 41. BRACHYSTELMA.

- Corolla subrotate, small. Corona-folioses deeply 2-fid, with a very long, taper-pointed process on the face. Flowers in umbels . . . . . 42. **LOPHOSTEPHUS.**
- Corolla bell-shaped, with a short limb. Corona-folioses short, bluntly 3-cuspidate. Flowers in umbels . . . . . 43. **SISYRANTHUS.**
- Corona gamophyllous, saucer-shaped, with 5 short, truncate lobes and rounded interspaces . . . . . 44. **MICRASTER.**
- Stems leafless, thick and fleshy, 4- or many-angled.
- Corolla with a tooth-like lobe between each of its larger lobes. Corona double . . . 45. **HUERNIA.**
- Corolla 5-lobed, without any tooth-like intermediate lobes.
- Corona of 5 dorsally-toothed folioses . . 46. **PIARANTHUS.**
- Corona double.
- Stems 4-angled, with toothed ridges.
- Corolla fleshy . . . . . 47. **STAPELIA.**
- Stem many-angled, thorny. Corolla membranous, large and flat . . . 48. **HOODIA.**

### TRIBE 1. PERIPLOCEÆ. (Gen. 1-3.)

#### 1. **ECTADIUM**, E. Mey.

Calyx 5-parted; sepals deciduous. Corolla salver-shaped, with a subcampanulate short tube; lobes 5, spreading, twisted to the left; throat with 5 lanceolate, compressed, subexserted scales, alternating with the lobes. Stamens inserted in the base of the corolla-tube; filaments free, very short; anthers dorsally hairy, tapering into very long plumose crests. Pollen-masses 20, composed of spherical grains, each of 4 pollen-granules, affixed to the 5 oblong-truncate corpuscles. Stigma 5-angled, apiculate. Follicles smooth, slender, divaricate.—*DC. Prod.* viii. p. 500.

*E. virgatum*, E. Mey., is an erect, rod-like undershrub of Namaqualand, with opposite, linear, acute leaves, and axillary, cymose, peduncled flowers.

#### 2. **RAPHIONACME**, Harv.

Calyx short, 5-parted; sepals deciduous. Corolla subrotate; limb 5-parted, the segments spreading, imbricate in bud; throat with 5 taper-pointed, simple or deeply 3-lobed scales, alternating with the segments. Stamens in the throat, subexserted; filaments free, short; anthers attached at base to the margin of the stigma, sagittate, with a broad connective, mucronate, glabrous. Pollen-masses 5, granular (each grain of 4 pollen-granules), affixed to the dilated apices of 5 spoon-



shaped corpuscles. Stigma conico-pyramidal, 5-angled. Follicles smooth, tapering, divaricate.—*Thes. Cap. t. 66.*

Small, branching herbs, with turnip-like fleshy roots, erect or rarely climbing. Leaves opposite, glabrous or hairy. Flowers in cymes or fascicles, terminal or axillary, purple or green.—10-12 species in the Eastern district and at Natal.

### 3. LEPTOPÆTIA, Harv.

Calyx short, 5-parted; segments ovate. Corolla rotate, 5-parted, the segments lanceolate-oblong, slightly twisted to the left; throat with 5 subulate-filiform, very long and slender, much-exserted scales. Filaments connate, free at apex only; anthers free from stigma, sagittate, cohering by their triangular-acuminate, glabrous crests. Pollen-masses granular (each grain of 4 pollen-granules), affixed to 5 deeply 2-fid corpuscles. Stigma depressed, with a conoidal umbo.

A climber, with the habit and many of the characters of *Pentopetia*, Dene., recently found by Mr. Gerrard near Natal.

## TRIBE 2. SECAMONEÆ. (Gen. 4.)

### 4. SECAMONE, R. Br.

Calyx very short, 5-fid. Corolla rotate or subcampanulate, deeply 5-parted, the lobes twisted to the right, glabrous or pubescent within. Corona 5-leaved, folioles laterally compressed, decurrent below along the gynostegia, free above, falcate or ligulate, simple. Pollen-masses 20, erect, attached by fours to each of the 5 small, fleshy corpuscles. Stigma short or elongate, entire or absolutely 2-lobed.—*DC. Prod. viii. p. 501.*

Decumbent or voluble, rarely suberect shrubs. Leaves opposite, coriaceous. Cymes or panicles axillary; flowers often minute, not always.—4 Cape species, Eastern and from Natal.

## TRIBE 3. EUASCLEPIADEÆ. (Gen. 5-29.)

### 5. ASTEPHANUS, R. Br.

Calyx 5-parted; sepals erect, acute. Corolla bell-shaped or ovoid-bell-shaped, the throat and tube without scales. Corona 0. Anthers membrane-tipped. Pollinia small, ovoid or roundish, pendulous. Stigma elongate, mostly 2-fid, rarely simple or depressed. Follicles smooth.—*DC. Prod. viii. p. 507; Thes. Cap. t. 91.*

Voluble or decumbent undershrubs, with opposite glabrous leaves. Cymes or umbels interpetiolar; flowers small, mostly pale.—6 or 7 species, dispersed.

6. **HÆMAX**, E. Mey.

Calyx 5-parted. Corolla urceolate, with a very short limb, the lobes hood-shaped, inflexed, valvate; tube angular within, round the gynostegium reversely hairy. Corona 0. Anthers membranous-tipped. Pollinia taper-pointed, pendulous. Stigma prominent, obtuse, entire. Follicles smooth, often solitary.—*DC. Prod.* viii. p. 509.

Rigid, spinous, divaricately-branched shrubs, with minute, deciduous, cordate leaves, and very small, umbelled flowers.—2 species, Northern and North-Eastern.

7. **MICROLOMA**, R. Br.

Calyx 5-parted; sepals acute, sometimes longer than corolla. Corolla urceolate, 5-fid, the lobes short, twisted to the left; throat nude; tube swollen, 5-angled, with 5 scales or prominences, 1 under each sinus, alternating with as many tufts of reflexed hairs. Corona 0. Anthers membranous-tipped. Pollinia compressed, pendulous. Stigma apiculate. Follicles smooth.—*DC. Prod.* viii. p. 510; *Thes. Cap.* t. 92.

Voluble or erect, sometimes spiny undershrubs, with opposite, narrow leaves, and interpetiolar umbels of small, waxy, red flowers.

8. **PARAPODIUM**, E. Mey.

Calyx 5-parted. Corolla 5-parted, somewhat bell-shaped, twisted to the left. Corona 5-leaved; folioles rounded, alternate with the corolla-lobes, on each side decurrent in a very short tube. Anthers membrane-tipped. Pollinia compressed, taper-pointed, pendulous. Stigma pyramidal, 5-furrowed, obtuse.—*DC. Prod.* viii. p. 511.

An erect herb (unknown to me), with subopposite leaves, and alternate, never axillary, peduncled umbels, lateral between each pair of petioles.—Found on the Witberg.

9. **CORDYLOGYNE**, E. Mey.

Calyx 5-parted. Corolla 5-parted, bell-shaped; segments concave below, with recurved tips. Corona 5-parted; folioles connate at base, erect, fleshy, with broad, linear claw and oblong limb truncate at base, very obtuse at apex, and having, on the inner face, a small, transverse, projecting lamella. Anthers membrane-tipped. Stigma long, exserted, cylindrical-capitate. Follicles solitary, smooth, slender.—*DC. Prod.* viii. p. 518.

A slender, erect herb, glabrous except the peduncles and calyx. Stems virgate; leaves very narrow, with revolute margins; peduncles many-flowered, the flowers crowded, small, yellow-green.—Native of the Eastern frontier and Caffraria.

10. **KREBSIA**, Harv., not E. and Z.

Calyx 5-parted. Corolla bell-shaped, 5-parted; segments very concave below, with reflexed, velvety, opaque apices. Corona 5-leaved; folioles from a broad base, lanceolate-acuminate, erect, flat within, dorsally keeled, with inflexed apices. Anthers with large membranous tips, applied to sides of stigma. Stigma projecting, barrel-shaped, bluntly 5-angled, concave at summit. Follicles?

A branching undershrub, 6-12 inches high. Leaves narrow-linear, long, with revolute margins, glabrous. Peduncles interpetiolar, very short or obsolete; flowers umbellate, yellow-green, of mediocre size. This has nearly the corolla of *Cordylogyne*, but a very different corona and stigma. —Sent by Mrs. F. W. Barber and Mr. H. Bowker from Kreili's country (No. 293), and by Mr. Gerrard from Buffalo River, Natal (n. 1309). The generic name is in honour of Herr Krebs, a meritorious collector of South African plants.

11. **MACKENIA**, Harv.

Calyx 5-parted. Corolla rotate, 5-parted, the lobes oblong, flat, spreading. Corona 5-leaved, the lobes subulate, acute, erect, longer than the gynostegium, keeled, with a longitudinal, medial furrow on the face, the margins at base and that of the sinus reflexed. Anthers membrane-tipped. Stigma pentagonal, flattish, with a 5-nippled umbo in the centre. Follicles inflated, solitary, covered with long, slender, plumose, soft shreds.

Erect, hairy herbs, with the aspect of *Schizoglossum atropurpureum* and *S. virens*.—2 species, one sent by Mrs. F. W. Barber and Mr. Bowker from Kreili's country, and by Dr. Sutherland from Natal; and both found at the Dargle farm by Mr. Fannin (n. 36 and 48). Named in honour of Mr. J. M'Ken, Esq., Curator of the Botanic Gardens, Natal, a very zealous and successful collector of the plants of the Natal colony.

12. **PERIGLOSSUM**, Dene.

Calyx 5-parted; sepals lanceolate. Corolla deeply 5-fid, the segments erect, oblong, conniving. Corona 5-leaved; folioles cordate or oblong, flat, narrowed at base, obtuse, thickened in the middle, equalling the gynostegium, bearing on the inner face a fleshy, adnate prominence. Anthers membrane-tipped. Pollinia compressed, linear or taper-pointed, pendulous. Stigma depressed, 5-angled.—*DC. Prod.* viii. p. 520; *Thes. Cap. t.* 111.

Erect, simple or branched herbs, with long, narrow-linear leaves, with revolute margins and terminal or interpetiolar peduncles, bearing dense heads of greenish flowers.—3 species, from Caffraria or Natal.

13. **GLOSSOSTEPHANUS**, E. Mey.

Calyx 5-parted. Corolla rotate, deeply 5-parted; segments narrow, reflexed. Corona 5-leaved; folioles simple, attached to the base of the gynostegae, oblong, with narrow, reflexed margins, above flattish, tongue-shaped. Anthers with small, membranous tips. Pollinia ovoid, taper-pointed, pendulous. Stigmas elongate, subpyramidal, emarginate.—*DC. Prod.* viii. *p.* 521.

A glabrous twiner, with narrow-linear or sublanceolate, petioled leaves. Peduncles extra-axillary, slender, laxly several-flowered, short; flowers small.—Western districts.

14. **ONCINEMA**, Arn.

Calyx 5-fid. Corolla bell-shaped, 5-parted, with a short tube. Corona inserted at the summit of the gynostegae, of 5 membranous, thin, flat folioles. Anthers membrane-tipped. Pollinia compressed, narrow-oblong, pendulous. Stigma conical-rostrate, elongate, sub-2-apiculate. Follicles?—*DC. Prod.* viii. *p.* 526.

A climbing, glabrous shrub. Leaves opposite, narrow. Cymes interpetiolar, diffuse, dichotomous, few-flowered.—Found by Roxburgh in the last century; locality unknown.

15. **XYSMALOBIUM**, R. Br.

Calyx 5-parted. Corolla widely bell-shaped, deeply 5-lobed or rotate, 5-parted; limb spreading or reflexed, glabrous or bearded. Corona at the summit of the staminal column, 5-parted, the folioles fleshy, spreading or rarely erect, ovate roundish oblong or strap-shaped, simple within, or rarely with a prominent ridge on the face, very rarely the apex inflexed. Anthers membrane-tipped. Pollinia compressed, pendulous, taper-pointed or truncate. Stigma pointless. Follicles ventricose, bearing soft shreds, the petiole twisted.—*DC. Prod.* viii. *p.* 519; *Thes. Cap.* t. 112.

Erect herbs, resembling *Gomphocarpus* in habit, and only distinguishable by the corona. Flowers large or small, in interpetiolar or terminal, peduncled or sessile umbels.—12 or 14 species, all Eastern.

16. **PACHYCARPUS**, E. Mey.

Calyx 5-parted. Corolla widely bell-shaped, spreading, more or less deeply 5-lobed. Corona 5-parted; folioles horizontal, of various shapes, mostly longer than the gynostegae, expanded (the margins not inflexed), bearing on the face two more or less projecting, longitudinal, subparallel ridges, which are

usually truncate at base, with salient angles. Other characters as in *Xysmalobium*.

Erect herbs, with the habit of *Xysmalobium*, but a different corona. There are several species, having the largest flowers of any of the allied genera. By Decaisne (DC. Prod. viii. p. 562) these plants are included in *Gomphocarpus*, but the structure of the corona is very different, as is also the form of corolla.

### 17. GOMPHOCARPUS, R. Br.

Calyx 5-parted. Corolla rotate, 5-parted, mostly reflexed. Corona 5-parted, erect or suberect, as long as the gynostegium or much longer, complicate-cucullate, laterally compressed, the margins strongly inflexed, the inflexion greatest above, where the angles are often salient, directed toward the stigma; apex either truncate or variously twisted. Other characters as in *Xysmalobium*.—DC. Prod. vii. p. 556; *Thes. Cap.* t. 67, 97, 192-5.

Shrubs undershrubs or erect herbs, with opposite leaves. Peduncles terminal and interpetiolar, umbellately many-flowered. Flowers mediocre, smaller than in *Pachycarpus*.—Many species, dispersed; several still undescribed.

### 18. FANNINIA, Harv.

Calyx 5-parted. Corolla rotate, 5-parted; segments flat, spreading, bearded at apex. Corona 5-leaved; folioles horizontally spreading, longer than the gynostegium, flat, oblong, obtuse, with a medial nerve, furnished at base on the inside with two collateral, tongue-like processes. Anthers membrane-tipped. Pollinia compressed, obovate, pendulous. Stigma depressed-pentagonal. Follicles?

*F. caloglossa*, H., the only species, is a small, pubescent herb, with opposite, oblong leaves. Peduncles interpetiolar, umbelled. Flowers  $\frac{1}{2}$ – $\frac{3}{4}$  inch across, handsome.—Discovered at the Dargle Farm, Natal, by Mr. George Fannin (n. 49), to whose honour this genus is dedicated.

### 19. LAGARINTHUS, E. Mey.

Calyx 5-parted. Corolla 5-parted, rotate, the lobes erect or spreading. Corona 5-parted; folioles free, dilated at base, furnished with a tongue-shaped process on the inner side. Anthers tipped with a broadish membrane. Pollinia compressed, taper-pointed, suspended. Stigma depressed, obscurely 5-angled. Follicles smooth, fusiform.—DC. Prod. viii. p. 555.

Erect, slender herbs, with narrow leaves. Flowers small, green or brownish, in extra-axillary peduncles, umbellate.—4 or 5 species, dispersed.

### 20. ASPIDOGLOSSUM, E. Mey.

Calyx 5-parted. Corolla 5-parted, rotate. Corona 5-parted



to the base or nearly so; folioles or segments broad-based, oblong, flattish or concave, tapering into a medial subulate-acuminate lobe, opposite to which, on the face of the foliole, is a similar tongue-like process; lateral lobes or angles short, erect or inflexed. Anthers membrane-tipped. Pollinia compressed, taper-pointed, pendulous. Stigma depressed, muticous. Follicles clothed with soft shreds.—*DC. Prod.* viii. *p.* 555.

Erect herbs, often with narrow leaves. Umbels axillary, subsessile; flowers small, green or brown.—Several species (some undescribed), dispersed, chiefly Eastern.

## 21. SCHIZOGLOSSUM, E. Mey.

Calyx 5-parted. Corolla rotate, 5-parted, spreading. Corona 5-parted; folioles oblong or ovate, subtruncate or obsoletely 3-toothed or emarginate at apex, furnished on the face with a tongue-shaped or 2-fid or 2-parted process, directed towards the stigma. Anthers membrane-tipped. Pollinia pendulous. Stigma muticous. Follicles clothed with soft shreds.—*DC. Prod.* viii. *p.* 553.

Erect herbs, with the habit of *Aspidoglossum*, from which this genus differs in the corona-folioles wanting the central acumination.—Several species, some undescribed.

## 22. PENTARRHINUM, E. Mey.

Calyx 5-parted. Corolla deeply 5-fid, the segments spreading or reflexed. Corona 5-parted; folioles cuneate or ovate, truncate, with the entire or basally-lobulate margins inflexed, and furnished within with a beak-like, inflexed process. Anthers membrane-tipped. Pollinia ovoid or oblong, suspended. Gynostegium short. Stigma depressed, with two medial nipples. Follicles ovoid, fleshy, covered with soft, short shreds.—*DC. Prod.* viii. *p.* 553; *Thes. Cap. t.* 11.

Climbing plants, with deeply cordate, long-petioled leaves and axillary, racemose, many-flowered peduncles. Flowers small, greenish. Fruit edible, but insipid.

## 23. CYNOCOTONUM, E. Mey.

Calyx 5-parted. Corolla rotate, 5-parted. Corona tubular, plaited, simple, either subtruncate or 5–10-crenate or toothed round the mouth, no inner laciniae. Anthers membrane-tipped. Pollinia clavate, subcompressed, pendulous. Stigma 2-lobuled or attenuate, with a 2-fid apex. Follicles slender, smooth, reflexed.—*DC. Prod.* v. *p.* 527.

Voluble or trailing plants. Leaves cordate or ovate. Peduncles axillary, many-flowered; flowers umbellate, small, brown or white.

24. **SARCOCYPHULA**, Harv.

Calyx 5-parted. Corolla rotate. Corona cup-shaped, 5-crenate, with swellings (as if saccate) between the crenatures. Anthers membrane-tipped. Pollinia ovoid, pendulous, fixed at the apex. Stigma depressed. Follicles?—*Thes. Cap. t. 191.*

*S. Gerrardi*, H., is a leafless, succulent, branching climber, with the habit of *Sarcostemma viminale* (with which it sometimes grows intermixed!), but from which it differs in the simple corona, not very unlike that of a *Cynoctonum*.—Natal.

25. **SARCOSTEMMA**, R. Br.

Calyx 5-parted. Corolla rotate, more or less deeply 5-fid, or urceolate-rotate, sinuately 5-lobed, the lobes sometimes with interposing teeth. Corona double, the outer cup-shaped or annular, crenate, more or less attached to the gynostegae or to the corolla-tube, inner 5-leaved; folioles fleshy, roundish, acuminate, longer than the outer corona. Anthers membrane-tipped. Pollinia club-shaped, pendulous. Stigma apiculate. Follicles slender, smooth.—*DC. Prod. viii. p. 537.*

Erect or climbing, leafless or leafy shrubs. The 2 Cape species are leafless, with jointed, succulent stems and rotate corollas. Flowers in lateral umbels.

26. **DÆMIA**, R. Br.

Calyx 5-parted. Corolla rotate. Corona double; outer short, annular, sinuate, 10-parted, the alternate lobules small; inner 5-leaved; folioles below somewhat spurred, above prolonged into a subulate, inflexed point. Anthers membrane-tipped. Pollinia compressed, taper-pointed, pendulous. Stigma pointless or convex in the middle. Follicles smooth or clothed with soft shreds.—*DC. Prod. viii. p. 543.*

Voluble plants, with opposite, cordate leaves. Peduncles axillary, elongate. Flowers racemose; corolla-lobes ciliate.—1 Cape species, near the mouth of Orange River.

27. **ENDOTROPIS**, Endl.

Calyx 5-parted. Corolla rotate, deeply 5-fid, the segments spreading, papillose within. Corona monophyllous, 5-fid, the segments opposite the anthers, furnished on the inside with a short process or tooth, and separated by a wide sinus, prominent outwards. Anthers membrane-tipped. Pollinia roundish, pendulous. Stigma somewhat pointed, 2-lobed. Follicles smooth, hoary, taper-pointed.—*DC. Prod. viii. p. 546.*

Climbing or trailing plants, with cordate leaves. Flowers umbelled, axillary.—1 Cape species, Eastern.

28. **EUSTEGIA**, R. Br.

Calyx 5-parted. Corolla rotate, 5-fid. Corona triple, each of 5 folioles, the outermost inserted in the throat of corolla, opposite the segments, the others alternating with the outer; the folioles of the medial corona 3-parted, of the inner undivided. Anthers membrane-tipped. Pollinia taper-pointed, pendulous. Stigma nearly pointless.—*DC. Prod.* viii. p. 545.

Small, decumbent, branching herbs, with narrow, hastate leaves and subumbellate, small flowers.—4? species, Western.

29. **FOCKEA**, Endl.

Calyx 5-parted; sepals keeled. Corolla campanulate, 5-fid, the segments linear-lanceolate, attenuate, spreading or reflexed, papillose within. Corona campanulate, tubular, triple, the folioles concrete at base; outer with the mouth 15-lobed, lobes unequal, short, 5 smaller; medial longer, of 5 concave, 3-lobed segments, the middle lobe subulate; inner of 5 subulate-acuminate, entire segments, opposite those of the medial corona. Anthers tipped with an oblong, very delicately membranous bag! Pollinia (*fide Endl.*) "ovoid, affixed to the tapering apex, pendulous." Gynostege sessile. Stigma subumbonate. Follicles smooth, rostrate, by abortion solitary.—*DC. Prod.* viii. p. 545. Chymocormus, *Harv. in Hook. Lond. Journ.* i. p. 23.

Climbing or trailing herbs, with large, tuberous, succulent roots. Leaves opposite, coriaceous. Flowers small, greenish, subsessile, in extra-axillary tufts or solitary. The flowers seem to be sometimes polygamous; I have repeatedly sought in my specimens for pollinia, but never found any.—3 species.

## TRIBE 4. STAPELIEÆ. (Gen. 30–48.)

30. **TENARIS**, E. Mey.

Calyx small, 5-parted. Corolla subrotate, 5-parted, the segments narrow-spathulate, papillose below. Corona inserted at the apex of the gynostege; of 5 short, cucullate, sharply emarginate folioles, alternating with the stamens, furnished at the base within with two tooth-like processes; and 5 internal, subulate teeth, opposite the stamens. Anthers small, without membranous tip, fleshy. Pollinia erect, roundish. Stigma 5-angled, flattish. Follicles in pairs, slender, smooth, erect, on a straight peduncle.—*DC. Prod.* viii. p. 606; *Thes. Cap. t.* 43.

A slender, erect herb with very narrow leaves and pretty, purplish flowers.—Frequent on the Eastern frontier.

31. **TYLOPHORA**, R. Br.

Calyx 5-fid; sepals ovate or ovate-lanceolate. Corolla ro-

tate, 5-parted. Corona 5-parted; folioles simple, acuminate, fleshy, more or less affixed to a prominent gynostegæ, very rarely overtopping the stigma. Anthers membranous-tipped. Pollinia transverse or subascending, or erect, minute, ventricose. Stigma pointless, prominent, obscurely emarginate. Follicles smooth, taper-pointed, compressed, somewhat angular on one side.—*DC. Prod.* viii. p. 606.

Climbing, vine-like plants, with ovate-acuminate or lanceolate, petioled leaves, and interpetiolar peduncles. Flowers small.—2 Cape species, on the Eastern frontier and at Natal.

### 32. DREGÆA, E. Mey.

Calyx 5-leaved. Corolla rotate, deeply 5-fid, the lobes obscurely emarginate, twisted to the left. Corona 5-parted; folioles fleshy, reniform, adnate to the gynostegæ. Anthers minute, tipped by a long, obtuse membrane. Pollinia erect, affixed at base to a long cord, ovoid, small. Stigma conical, emarginate. Follicles in pairs, divaricate, broadly 4-winged, smooth.—*DC. Prod.* viii. p. 618; *Deless. Ic. Sel.* v. t. 86.

*D. floribunda*, E. Mey., the only Cape species, is a climbing shrub, with ovate-acuminate, glabrous leaves, and small, white, umbelled flowers, on terminal or interpetiolar peduncles. When in fruit, it will at once be recognized by its 4-winged follicles.—Eastern frontier and Natal.

### 33. GYMNEMA, R. Br.

Calyx 5-parted; sepals erect, ovate, small. Corolla rotate, 5-fid; the lobes scarcely longer than the calyx, often triangular, thickish, twisted in bud; throat with 5 decurrent, fleshy, tooth-like scales, alternating with the lobes, channelled in front. Corona 0. Anthers with a short membranous tip. Pollinia erect, basifixed, ovoid, on very short cords. Follicles smooth.—*DC. Prod.* viii. p. 621.

An African and Indian genus of several species.—The only Cape species (*G. M'Kenii*, H.), was found in 1863 by Mr. M'Ken, in a damp ravine near Sydenham, Natal.

### 34. RHYSSOLOBIUM, E. Mey.

Calyx 5-parted. Corolla somewhat ovoid-bellshaped, densely hairy within, without scales in the throat. Gynostegæ included. Corona 0. Anthers membranous-tipped. Pollinia subovoid, erect. Stigma apiculate, obscurely emarginate. Follicles turgid, short, ridge-furrowed lengthwise.—*DC. Prod.* viii. p. 626.

*R. dumosum*, E. M., is a much-branched, rigid, hoary shrub, resembling *Hæmax Massoni*. Leaves small, on the ends of small branches. Flowers 1-2, interpetiolar, very minute. Unknown to me; found in Namaqualand.

35. **BARROWIA**, Dene.

Calyx 5-parted; sepals lanceolate, erect. Corolla with a long, terete tube, inflated at base, and a 5-lobed, spreading limb; lobes lanceolate, obtuse, induplicate-valvate in bud; the throat nude. Gynostege included. Corona membranous, bluntly 5-lobed, the lobes opposing the anthers, attached to the base of the gynostege. Anthers tipped with an erect, short point. Pollinia ovoid, on very delicate cords, the apex pellucid and constricted. Stigma flat, 5-angled, minutely apiculate. Follicles?—*DC. Prod.* viii. p. 629; *Deless. Ic. Sel.* v. t. 88.

*B. jasminiflora*, Dene., is a trailing or climbing herb, with oblong or lanceolate, scabrous leaves, and handsome, white, jasmine-like flowers, in interpetiolar umbels. Found by Burchell; more recently by Miss Owen in Zululand, and by Burke and Zeyher at Magalisberg.

36. **RIOCREUXIA**, Dene.

Calyx small, 5-parted. Corolla with a swollen base, flask-shaped; the limb of 5 lanceolate, glabrous lobes cohering by their apices. Gynostege included, stipitate. Corona 2-seriate, the outer folioles narrow, spreading, rigid, spur-like, inserted at the summit of the gynostege; inner, opposite the anthers, very short, obtuse, fleshy. Anthers not membranous-tipped. Pollinia erect, ventricose, with an oblique, pellucid, incurved crest. Stigma 5-angled, obscurely apiculate. Follicles slender, elongate, smooth, torulose.—*DC. Prod.* viii. p. 640; *Deless. Ic. Sel.* v. t. 91.

Halfshrubby climbers, with cordate leaves, and greenish or dark purple, often streaked flowers, resembling those of *Ceropegia*.—Perhaps 2 species, natives of the Eastern frontier and Natal.

37. **CEROPEGIA**, Linn.

Calyx short, 5-parted. Corolla tubular, more or less inflated at base, pitcher- or flask-shaped, with (usually) a funnel-shaped throat; limb 5-parted, the lobes erect, spreading or pendulous, free or cohering at the tips, often ciliated, valvate in bud. Corona bell-shaped or rotate in a double row, 5–10–15-lobed, the lobes opposite the anthers usually longer, strap-shaped, often conniving. Anthers nude at tip. Pollinia erect, roundish or ovate, pellucid on the inner margin. Stigma blunt. Follicles cylindrical, smooth.—*DC. Prod.* viii. p. 641; *Thes. Cap.* t. 14 (the plate is incorrect; the lobes of corolla should be pendulous).

Halfshrubs or herbs, with numerous fleshy roots, climbing or rarely sub-erect; leaves various or 0; flowers solitary or few together, very curious



and varied in aspect, but dull in colour.—There are several species, natives of the Eastern frontier and Natal.

### 35. BRACHYSTELMA, R. Br.

Calyx 5-parted. Corolla bell-shaped, with projecting or reflexed sinuses; limb 5-parted; segments acuminate, spreading. Corona 5-leaved; folioles adnate to the middle of the gynosteg, 3-lobed, short, the lobes opposite the anthers simple and longer, “furnished at base within with 2 more or less pilose teeth.” Gynosteg included. Anthers not membrane-tipped. Pollinia erect, obliquely ovate, with a pellucid, subtruncate, oblique apex. Follicles in pairs, slender, smooth, erect, on a straight peduncle.—*DC. Prod.* viii. p. 646.

Herbs with large tuberous turnip-shaped roots, opposite, pilose, broadish or narrow leaves, and solitary or 2–3-nate, interpetiolar, brown flowers.—Several species, some undescribed, all Eastern.

### 36. DICHÆLIA, Harv.

Calyx 5-parted. Corolla bell-shaped, with projecting or reflexed sinuses; limb 5-parted; segments taper-pointed (often linear-elongate), rarely panduriform, erect, mostly cohering by the tips, rarely free. Corona double; the outer of 5 2-fid, 2-dentate, or 2-parted, or of 10 simple, ligulate folioles adnate to the middle of the gynosteg; the inner of 5 simple, linear-oblong or spatulate folioles, opposite the anthers. Other characters as in *Brachystelma*.—*Thes. Cap. t.* 93.

Herbs, with tuberous roots, etc., as in *Brachystelma*; from which this genus differs in the structure of its corona, and very generally by the cohering tips of the corolla-lobes. *D. Gerrardi* and another unpublished species from Natal want this character, and differ slightly from the rest in habit.—There are several species.

### 37. MACROPETALUM, Burch. mss.

Calyx 5-parted. Corolla 5-parted, the segments narrow-linear, very slender, reflexed. Corona 5-parted; folioles acuminate, attenuate, overtopping the erect gynosteg, sagittate-eared at base, the ears rounded. Anthers tipped with a small membrane. Pollinia erect, subobovate, on one side and below with the margin pellucid, affixed to a small corpuscle. Stigma conoid, scarcely overtopping the stamens, 5-angled at base. Follicles erect, slender, the adult coalescing below, free above, glabrous.—*DC. Prod.* viii. p. 626.

*M. Burchellii*, Dene., is a very slender, glabrous, straight, erect herb, with filiform leaves, and pale green flowers, 3–5 together, on extra-axillary pedicels.—Found by Burchell between Klaar-water and Litakun.

38. **DECACERAS**, Harv.

Calyx 5-parted. Corolla somewhat bell-shaped, spreading, deeply 5-lobed; lobes ovate, subacute. Corona double; the outer cup-like, 10-toothed round the edge, the teeth approaching in pairs; inner of 5 subulate, simple folioles, opposite the anthers, inserted considerably within the margin of the cup. Other characters as in *Brachystelma* and *Dichælia*.—*Thes. Cap. t.* 114.

Scarcely different from *Dichælia*, except in the form of the corolla, and the complete confluence of the parts of outer corona.—*D. Huttoni*, H., grows on Botha's Hill, Grahamstown.

39. **MICRASTER**, Harv.

Calyx 5-parted. Corolla shortly and widely bell-shaped, 5-lobed; lobes acuminate, spreading. Corona gamophyllous, membranous, saucer-shaped, with 5 very short truncate lobes, separated by shallow, rounded sinuses, and each bearing on its face a fleshy ridge (or adnate inner foliole?) opposite the anther. Other characters as in *Brachystelma*.

*M. pulchellus*, H., sent from Natal by Mr. Sanderson (342), is a trailing herb; root unknown to me. Stems simple? Leaves ovate, acute, petioled, in subdistant pairs, small. Flowers axillary, dark purple, 2-3 lines diameter, resembling a minute starfish. It is known from *Brachystelma* by its corona only.

40. **LOPHOSTEPHUS**, Harv.

Calyx 5-parted. Corolla rotate-bell-shaped, spreading, 5-lobed; lobes ovoid, fleshy, margined, straight in bud. Corona deeply 5-parted, the folioles deeply 2-fid, bearing on the inside (opposite the anthers) a very long, strap-shaped, taper-pointed process. Anthers nude at tip. Pollinia ovoid, erect, basifixed, with the apex and part of inner margin pellucid. Stigma 5-angled, depressed.—*Thes. Cap. t.* 113.

A trailing, softly leafy plant, with many fascicled, somewhat fleshy roots. Leaves cordate. Flowers small, with white tube, and brown, velvety limb, in peduncled, lateral umbels.—One described species (*L. mollis*, H.), from the Eastern mountains.

41. **SISYRANTHUS**, E. Mey.

Calyx 5-parted. Corolla bell-shaped, with acute sinuses, 5-lobed; lobes erect, short, either bearded within or nude. Gynostegium included. Corona 5-parted; folioles short, broad, 3-cuspidate, the cusps bluntly deltoid. Anthers nude or ciliate at tip. Pollinia erect, oblong, pellucid obliquely at the apex. Stigma depressed.—*DC. Prod. viii. p.* 496; *Thes. Cap. t.* 115, 116.

Erect, virgate, very slender, rigid herbs, with many fascicled, somewhat

fleshy roots. Leaves narrow-linear, glabrous or pubescent. Flowers small, in many-flowered, interpetiolar umbels.—2 (or perhaps 4) species, natives of the Eastern frontier and Natal.

#### 42. PIARANTHUS, R. Br.

Calyx 5-parted. Corolla bell-shaped, 5-fid, fleshy. Gynostegium included. Corona simple, 5-parted; folioles dorsally toothed. Anthers nude at tip. Pollinia erect, pellucid at one side. Stigma pointless.—*DC. Prod.* viii. p. 650; *Mass. Stap.* t. 24, 31, 35, 23, 24; *Bot. Mag.* t. 1648.

Leafless succulents, with the habit of *Stapelia*; differing in the corona.—6 species, natives of dry plains, and on the Northern frontier.

#### 43. HUERNIA, R. Br.

Calyx 5-parted. Corolla bell-shaped, the limb 10-cleft, the alternate lobes small, tooth-like. Gynostegium included. Corona double; the outer 5-parted, with 2-fid lobes; inner of 5 broad-based, awl-shaped folioles, alternating with the outer segments. Other characters as in *Piaranthus*.—*DC. Prod.* viii. p. 650; *Mass. Stap.* t. 2, 6, 3, 4, 7; *Bot. Mag.* t. 1662, 1227, 2401, etc.

Leafless succulents, as the last genus.—11 species, from Karroo plains, etc.

#### 44. STAPELIA, Linn.

Calyx 5-parted. Corolla rotate, 5-fid, fleshy. Gynostegium often exserted. Corona double; the outer folioles or segments entire or parted; the inner horn-like, simple or 2-fid. Anthers nude at tip. Pollinia erect, pellucid on one side. Stigma depressed. Follicles smooth, erect.—*DC. Prod.* viii. t. 652; *Mass. Stap.* t. 11, et passim.

Fleshy, branching, leafless plants, the stems and branches very generally 4-angled, with toothed ridges. Flowers mostly handsome (but detestably scented), purple or greenish or spotted; sometimes delicately fringed.—About 90 species, natives of dry plains, etc.

#### 45. HOODIA, Sw.

Calyx 5-parted. Corolla rotate, the tube very short; limb very large, dilated, concave, membranous, nerved, obsoletely 5-lobed, lobes tipped with a sharp point. Gynostegium included. Corona double; outer 5-fid, the lobes rounded, erect, incurved, obtuse, 2-fid, with an intermediate inflexed tooth; inner of broad-based, oblong, obtuse folioles, alternating with those of the outer row. Other characters of *Stapelia*.—*DC. Prod.* viii. p. 664; *Mass. Stap.* t. 40. *Scytanthus Gordonii*, *Hook. Ic. Pl.* t. 625.

*H. Gordonii*, Sw., our only species, is an erect, fleshy and thorny, many-angled succulent, bearing solitary, shield-shaped, delicate flowers, 2-4 inches in diameter.—Native of Namaqualand.

## ORDER LXXXI. APOCYNEÆ.

Calyx 5-(or 4-)parted, imbricate. Corolla hypogynous, gamopetalous, regular, 5-(or 4-)lobed, deciduous, twisted-imbricate in bud. Stamens on the corolla, as many as its lobes, and alternate with them; filaments distinct; anthers 2-celled; pollen powdery. Carpels 2, either distinct or united into a bilocular ovary; styles confluent upwards; stigma 1. Fruit follicular, capsular, berried or drupaceous. Seeds many or few; albuminous.—Shrubs or rarely herbs, mostly with a milky, poisonous juice. Leaves mostly opposite, quite entire, without stipules. Chiefly tropical and subtropical.

Ovary single, 2-celled.

Ovules solitary in each cell . . . . . 2. TOXICOPHLEÆ.

Ovules more than 1 in each cell.

No cup-like disk round the ovary . . . . . 1. CARISSA.

A cup-like disk girding the ovary . . . . . 3. RAUWOLFIA.

Ovary double, of 2 separate carpels; style simple.

Calyx tubular-bellshaped, shortly 5-lobed, deciduous . . . . . 4. PIPTOLÆNA.

Calyx 5-parted.

Trees shrubs or undershrubs, not spiny or fleshy.

Corolla salver-shaped, with short, obtuse lobes.

Linear glands within the calyx, at base of lobes; anthers taper-pointed . . . 5. TABERNÆMONTANA.

No glands within the calyx; anthers obtuse . . . . . 6. GONIORNA.

Corolla funnel-shaped; lobes very long, linear-subulate; 5 2-partite scales in the throat . . . . . 7. STROPHANTHUS.

Succulent shrubs, armed with twin-spines in the place of stipules.

Calyx glandular within at base; anthers on short filaments; seeds comose at each end . . . . . 8. ADENIUM.

Calyx-lobes not glandular within; anthers sessile; seeds comose at the scar only . . . . . 9. PACHYPODIUM.

### 1. CARISSA, Linn.

Calyx 5-parted; lobes unequal, with a row of subulate, fleshy glands at base within. Corolla salver-shaped, the tube hairy within. Anthers longer than the filaments, lanceolate,

obtuse or pointed. Ovary 2-celled, glabrous, with a thick septum; ovules few; style thickened upwards; stigma 2-lobed, hairy, falling off. Berry globose or ovoid (eatable), few- or 1-seeded; seeds peltate, scabrous.—*DC. Prod.* viii. p. 331.

Milky shrubs with forked, spreading branches, opposite, rigid leaves and forked or twice-forked spines in the forks of the branches. Peduncles dichotomous, often terminal; flowers white, sweet-scented. Fruit very delicious, plum-like.—3 or 4 species, in the Eastern districts and at Natal.

## 2. TOXICOPHLEA, Harv.

Calyx 5-parted, with an obsolete, crenate disk inside at base, outside the corolla; lobes short. Corolla-tube much longer than the calyx, cylindrical, slightly swollen in the throat, thinly hairy within; limb of 5 short, ovate, unequal-sided, imbricated lobes. Stamens 5, in the throat, included; anthers longer than the filaments, cordate. Ovary 2-celled; ovules solitary; style elongate, filiform; stigma conico-capitate, 2-fid. Berry ovoid, 1- rarely 2-seeded.—*DC. Prod.* viii. p. 336; *Harv. Thes.* t. 16.

Unarmed trees or large shrubs, with poisonous bark. Leaves opposite, rigid, penninerved, glabrous. Flowers in dense, axillary fascicles; corolla-tube  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; limb 1 line long.—2 species, in the Eastern district and at Natal.

## 3. RAUWOLFIA, Plum.

Calyx 5-parted or 5-fid; the lobes not glandular, often obtuse. Corolla 5-fid or semi-5-fid; tube cylindrical, wider at base and apex, mostly hairy within, the throat especially so; lobes twisted to the right. Stamens inserted in the middle of the corolla-tube or above it; anthers lanceolate, longer than the filaments. A cup-like disk, often crenate, girding the ovary. Ovary 2-celled, of 2 imperfectly cohering carpels; ovules 2–5 in each cell; style about equalling the ovary; stigma capitate, hairy, 2-fid. Drupe didymous, subglobose, with 2 more or less connate bony cells.—*DC. Prod.* viii. p. 336; *Sond. in Linn.* xxiii. p. 77.

Shrubs or small trees, chiefly American, with opposite or whorled leaves, and terminal, peduncled cymes or umbels. Flowers small.—2 species, found at Magalisberg and Natal.

## 4. PIPTOLÆNA, Harv.

Calyx tubular-bellshaped, at base within muricated with glands; lobes ovate, obtuse; tube after flowering falling off by a circular slit a little above its base. Corolla somewhat funnel-shaped, its tube much more slender than the calyx and scarcely longer, swollen in the throat; lobes obliquely ovate,



spreading; anthers in the throat, sagittate, conniving (but not cohering) in a half-exserted cone, tipped with empty crests filaments very short. An annular disk girding the ovary. Carpels 2, separate; style single, cup-like at the summit, with 2 retrorsely barbed appendages; stigma 2-lobed. Follicles 2, berry-like, widely spreading, with thick rind. Seeds many, ovoid, nude, lying in pulp.—*DC. Prod.* viii. p. 357.

*P. Dregei* is a large tree, growing in swamps at Natal. Leaves opposite, with an interpetiolar ring, oblong-lanceolate, obtuse. Flowers yellowish-white, handsome, in terminal cymes.

### 5. TABERNÆMONTANA, Plum.

Calyx 5-parted, with linear glands inside at the base of the lobes. Corolla salver-shaped; tube inflated below or above, mostly narrower in the middle; throat nude, rarely glandular; lobes obtuse. Stamens in the swollen part of corolla-tube; anthers on very short filaments, mostly sagittate, taper-pointed, rarely linear, mostly included. Disk 0. Carpels 2, separate, appressed, glabrous; style simple, glabrous; stigma among the anthers, with a basal ring, capitate, 2-lobed. Follicles 2 or 1, linear-oblong or subglobose, more or less fleshy, pulpy; ovules many; seeds few or many, lying in pulp.—*DC. Prod.* viii. p. 361.

Tropical trees and shrubs; branches often forked. Leaves opposite, the petioles short, often expanded or connate at base in false interpetiolar stipules. Cymes axillary and often in terminal pairs; flowers white or yellow.—2 species, at Natal.

### 6. GONIOMA, E. Mey.

Calyx 5-parted; lobes glandless, ovate, obtuse, crenulate. Corolla salver-shaped, the tube from the middle rather wider and angular, constricted at the summit, hairy within from the middle to the apex; throat without appendage; lobes ovate-cordate, obtuse. Stamens 5, inserted a little above the middle of the tube; anthers oblong, 2-lobed at base, obtuse, much longer than the very slender filaments. Disk 0. Carpels 2, subconnate at base, ovoid-acute, glabrous; style 1; stigma ovoid-oblong, 2-lobed. Follicles terete, widely spreading; seeds flat, with an oblong, encircling netted wing.—*DC. Prod.* viii. p. 387.

An erect, glabrous undershrub, with opposite, narrow, leathery leaves, and terminal cymes of yellow flowers.—Native of the Northern frontier.

### 7. STROPHANTHUS, DC.

Calyx 5-parted; the lobes at base within furnished with glands. Corolla with a funnel-shaped tube, its lobes linear-subulate, much longer than the tube, broad-based; throat fur-

nished with a 2-fid or 2-parted scale alternating with each lobe. Stamens inserted in the lower part of the tube; filaments linear, thickish; anthers linear-sagittate, adhering to the stigma, mucronate or aristate, sometimes dorsally hispid. Disk 0. Carpels 2, ovoid or subglobose, many-ovuled; style 1; stigma capitate, cylindrical, ringed at base. Follicles (in *S. Capensis*) solitary, lanceolate-acuminate, rigid; seeds linear-oblong, compressed, acute, with an ample, silky apical coma; embryo nearly as long as the horny albumen; radicle very long.—*DC. Prod.* viii. p. 417. *Also* Christya, *Ward and Harv. in Hook. Journ. Bot.* iv. p. 134. t. 21; *DC. l. c.* 416.

Climbing or rarely erect African and Asiatic shrubs; leaves opposite or whorled; cymes terminal, laxly-flowered; lobes of corolla 1–2 inches long, very narrow.—2 species; 1 in Caffraria, the other at Natal.

### 8. ADENIUM, Rœm. and Sch.

Calyx 5-parted; the lobes lanceolate, glandular within. Corolla-tube cylindrical and narrow at base, then swollen, pubescent on both sides, the swollen part longer than the narrow, cylindrical-funnel-shaped; lobes shorter than the tube, obtuse. Stamens on the top of the narrow portion of the tube; anthers linear-sagittate, attached to the stigma, much longer than the filaments, 5 ovate glands circling the ovary. Carpels 2, ovate, compressed, glabrous; ovules many; style 1; stigma capitate, 2-dentate, with a basal ring. Follicles? Seeds (in *A. Honghel*, fide DC.) cylindrical-prismatic, comose at both ends, the lower coma less caducous.—*DC. Prod.* viii. p. 411; *Thes. Cap.* t. 117.

*A. Namaquanum*, Wyl. (the “Elephant’s Trunk”) is a singular shrub of Namaqualand, having a thick and fleshy trunk 5–6 feet high, tapering upwards, tuberculated throughout, each tubercle armed with 2 long, straight spines; the apex of the stem crowned with a tuft of obovate-oblong, obtuse, velvety, ribbed leaves 4–5 inches long, among which are short, few-flowered cymes of purple flowers.

### 9. PACHYPODIUM, Lindl.

Calyx 5-parted; lobes lanceolate, without internal basal glands or scales. Corolla with a 5-angled cylindrical or somewhat funnel-shaped tube, externally puberulent, internally, below the insertion of the stamens, furnished with 5 reversely hairy lines, without scales; lobes 5, spreading. Anthers sessile above the middle of the tube, sagittate, with or without a terminal crest, attached to the stigma. Glands 5, fleshy, girding the ovary. Carpels 2, ovate, glabrous; ovules many; style 1; stigma oblong, shortly 2-fid. Follicles compressed,

suberect; seeds subcompressed, comose at the scar.—*DC. Prod.* viii. p. 424.

Fleshy, small shrubs, with immense tuberous roots, and twin-thorns on the branches, in the position of stipules. Leaves one to each pair of thorns. Flowers rosy or white toward the end of the branches.—2 or 3? species, natives of the Karroo plains, etc. Scarcely distinct from *Adenium*.

## ORDER LXXXII. LOGANIACEÆ.

Calyx free, 5-4-lobed or parted. Corolla regular, rarely irregular, hypogynous, 5-4- or several-lobed, valvate, twisted or imbricate in bud. Stamens on the corolla-tube, commonly as many as the lobes, rarely fewer or more numerous. Ovary 2-celled or rarely 3-1-celled; ovules amphitropous or rarely anatropous; style simple; stigma simple or 2-lobed. Fruit capsular or berry-like. Seeds mostly peltate, albuminous.—Shrubs, trees, rarely herbs, with opposite, entire leaves, and interpetiolar stipules, or at least a stipular line connecting the bases of the leaves.

Tribe 1. *STRYCHNEÆ*. Corolla valvate in bud. Fruit a pulpy berry.

Stamens in the throat, exerted; anthers separate;

calyx short . . . . . 1. *STRYCHNOS*.  
Stamens in base of tube, included, anthers united by  
interwoven hairs; calyx-lobes slender, longer than  
corolla. . . . . 2. *BREHMIA*.

Tribe 2. *BUDDLEIÆ*. Corolla imbricate in bud. Fruit a dry, septi-  
cidal capsule.

Stamens much exerted.

Corolla, after opening, splitting across above the base 3. *NUXIA*.  
Corolla not splitting above the base . . . . . 4. *CHILIANTHUS*.  
Stamens included or just reaching the throat of corolla-  
tube . . . . . 5. *BUDDLEA*.

### TRIBE 1. *STRYCHNEÆ*. (Gen. 1-2.)

#### 1. *STRYCHNOS*, Linn.

Calyx 5-lobed, short. Corolla salver- or funnel-shaped; the throat nude or bearded; limb 5-parted, lobes spreading, valvate in bud. Stamens 5, inserted in the throat of the corolla; filaments short; anthers more or less exerted. Ovary 2-celled; style filiform, continuous with the ovary; ovules many or few. Berry with a rind, 1-celled, many- or few- or 1-seeded; seeds lying in pulp, discoid, with a ventral scar, velvety or smooth.—*DC. Prod.* ix. p. 12; *Thes. Cap.* t. 164.

Trees or shrubs, often climbing, chiefly tropical. Leaves 3-5-nerved; cymes axillary or terminal.—4 or 5 species, from Eastern frontier and Natal.

## 2. BREHMIA, Harv.

Calyx 4-6-parted; segments subulate, longer than the corolla. Corolla funnel-shaped, 4-6-lobed; lobes erecto-patent, valvate in bud; throat bearded. Stamens inserted in the base of the corolla, included; filaments filiform; anthers cordate, basifixed, connivent, fringed with long, curled, interwoven hairs. Ovary on a crenate disk, ovate, 1-celled; ovules many, on a central fleshy placenta, peltate; style very short, conical; stigma subcapitate. Berry with a thick rind, globose, 1-celled, many-seeded. Seeds lying in pulp, peltate.—*DC. Prod.* ix. p. 18.

*B. spinosa* (*Strychnos spinosa*, Lam.) occurs in the Eastern district, Caffraria, and at Natal; it is also a native of Madagascar. It is a large shrub or small tree, with angular, spreading, spiny branches and 3-nerved leaves. The fruit, which is about as large as a small orange, contains a sweet and not unwholesome pulp, and is cultivated for the table in the Eastern districts.

## TRIBE 2. BUDDLEIÆ. (Gen. 3-5.)

## 3. NUXIA, Lam.

Calyx 4-toothed or 4-fid. Corolla-tube short, rarely subexserted, transversely slitting above the base shortly after the flower opens; lobes 4, spreading. Stamens 4, exserted; anthers ovate, becoming 1-celled by confluence. Ovary tomentose, 2-celled; ovules many; style simple, obtuse. Capsules 2-valved, septical; valves 2-fid or subentire, with inflexed edges. Seeds many.—*DC. Prod.* x. p. 434.

Trees or shrubs, natives of North and South Africa. Leaves glabrous or hairy, opposite or subverticillate, mostly entire. Flowers small, in cymes or panicles.—3 South African species, Eastern.

## 4. CHILIANTHUS, Burch.

Calyx 4-fid. Corolla-tube short, rarely subexserted, not transversely slitting at base; lobes 4, spreading. Stamens 4, exserted; anthers 2-celled. Ovary tomentose, 2-celled; ovules few or several; style filiform; stigma capitate. Capsules as in *Nuxia*. Seeds sometimes solitary.—*DC. Prod.* x. p. 435.

Cape trees or shrubs. Leaves tomentose on one or both sides, opposite, entire toothed or lobed. Flowers minute, paniced.—4 species, all Eastern.

## 5. BUDDLEA, Linn.

Calyx 4-toothed or 4-fid. Corolla-tube short or long; limb spreading or suberect, 4-parted; segments short. Stamens 4, either inserted in the throat, the anthers subsessile or within the tube, the anthers reaching the throat, or included. Style

clavate at the summit. Capsules as in *Nuxia*.—*DC. Prod.* x. p. 436.

Trees or shrubs, natives of Asia, Africa, and especially South America, mostly tomentose or woolly. Leaves opposite. Inflorescence various.—3 Cape species, all Eastern.

### ORDER LXXXIII. GENTIANEÆ.

Calyx free, commonly 5-(occasionally 4-12-)lobed, persistent. Corolla hypogynous, usually regular, marcescent; limb of as many lobes as the calyx, twisted-imbricate (in *Menyantheæ* induplicate). Stamens on the corolla alternate with its lobes. Ovary 1-celled or imperfectly 2-celled; ovules numerous on the inflexed margins of the carpels; style continuous with the ovary or deciduous; stigmas 2 or 1. Fruit capsular, rarely a berry, 1-celled, 2-valved. Seeds albuminous.—Herbs, rarely shrubby, very often glabrous, not milky, but very bitter in all parts. Leaves opposite (in *Menyantheæ* alternate), mostly connate at base, entire, exstipulate. Natives chiefly of the temperate and colder zones.

Tribe 1. EUGENTIANEÆ. Leaves opposite. Corolla twisted-imbricate in the bud. Terrestrial. (Gen. 1-7.)

Flowers red or purple (rarely white). Stamens much exserted, declinate. Perennials.

Anthers straight (not spirally twisted) . . . . 1. CHIRONIA.

Anthers spirally twisted.

A fleshy ring within the calyx, outside the corolla . . . . . 2. ORPHIUM.

No fleshy intra-calyxine ring . . . . . 3. PLOCANDRA.

Flowers yellow (rarely pale). Stamens shortly exserted or included, not declinate. Annuals.

Anthers at length recurved.

Anthers exserted . . . . . 4. SEBÆA.

Anthers included; 1 gland at apex, 2 glands at base . . . . . 5. LAGENIAS.

Anthers straight, unchanged.

Corolla with slender tube. Anthers separate, on short filaments . . . . . 6. BELMONTIA.

Corolla with wide tube, funnel-shaped. Anthers united by their edges, opening outwards; 1 large gland at apex, 2 minute glands at base . . . . . 7. EXOCHÆNIUM.

Tribe 2. MENYANTHEÆ. Leaves alternate. Corolla induplicate in bud. Water or marsh plants. (Gen. 8-9.)

Erect marsh plants, with ovate leaves. Capsules 2-valved . . . . . 8. VILLARSIA.

Floating water plant, with cordate-orbicular leaves.

Capsules valvless, decaying . . . . . 9. LIMNANTHEMUM



## TRIBE 1. EUGENTIANÆÆ. (Gen. 1-7.)

1. **CHIRONIA**, Linn.

Calyx 5-parted or 5-fid. Corolla rotate, marcescent; limb 5-parted. Stamens 5, in the throat, exserted, declinate; anthers not twisted, valves rigid, involute, cells confluent above. Ovary 1-celled, half-2- or half-4-celled; ovules many; style incurved, deciduous; stigma undivided, capitate or clavate, rarely 2-lobed. Capsules 2-valved, septicidal or rarely fleshy.—*DC. Prod.* ix. p. 39.

Perennial herbs or half-shrubs, all natives of South Africa. Flowers handsome, red; anthers very large, yellow.—11 species, dispersed.

2. **ORPHIUM**, E. Mey.

Character of *Chironia*, except: Disk ample, fleshy, annular, between the calyx and corolla. Anthers spirally twisted.—*DC. Prod.* ix. p. 43.

*O. frutescens* (*Chironia frutescens*) is a villous, much-branched bush, common on the Cape flats, with oblong-lanceolate or narrow leaves, and handsome, rosy flowers.

3. **PLOCANDRA**, E. Mey.

Character of *Orphium*, except: no intra-calyxine disk. Ovary 1-celled; style straight.—*DC. Prod.* ix. p. 43.

Herbs, growing in marshy spots, with numerous radical or subradical long leaves, and tall, sparsely leafy stems, cymose-paniculate at summit. Flowers red or white.—3 species, natives of Eastern frontier and Natal.

4. **SEBÆA**, R. Br.

Calyx 4-5-parted or 4-5-fid, the segments dorsally keeled or winged, or 4-leaved, the sepals not keeled. Corolla funnel-shaped or salver-shaped, marcescent, the tube cylindrical, at length inflated; limb 4-5-parted. Stamens inserted in the throat; anthers erect, exserted, at length recurved. Ovary by the inflexed edges of the valves 2-celled; style deciduous; stigma clavate or capitate, mostly 2-lobed. Capsules 2-valved, 2-celled, septicidal.—*DC. Prod.* ix. p. 52.

Annuals, natives of the Southern hemisphere. Cymes terminal; flowers yellow or whitish.—About 10 South African species.

5. **LAGENIAS**, E. Mey.

Character of *Sebæa*, except: Anthers included, just within the throat of corolla-tube, at length recurved, at the apex 1-glanded and at base 2-glanded.—*DC. Prod.* ix. p. 54.

A small annual, with narrow leaves and yellow flowers, found near Capetown.

6. **BELMONTIA**, E. Mey.

Character of *Sebæa*, except: Corolla salver-shaped, with a slender, cylindrical tube, wider at summit. Anthers included, straight, on very short filaments.—*DC. Prod.* ix. p. 54.

Annuals, with the habit of *Sebæa*; flowers yellow, very bright.—3 species, dispersed.

7. **EXOCHÆNIUM**, Griseb.

Character of *Sebæa*, except: Stamens inserted much within the corolla-tube; anthers erect, joined together by the inner edges of their cells, dehiscing on the outer face, minutely 2-glanded at base, crowned at apex by a single, oblong, subcapitate gland; filaments slender, distant, equalling the anthers.—*DC. Prod.* ix. p. 55.

*E. grande*, Griseb., is an annual, with the aspect of *Belmontia*, found in Caffraria and at Natal. Flowers larger than in the allied genera, yellow.

## TRIBE 2. MENYANTHEÆ. (Gen. 8-9.)

8. **VILLARSIA**, Vent.

Calyx 5-parted or deeply 5-fid, the segments united at base. Corolla deciduous, rotate or funnel-shaped, 5-parted or deeply 5-fid, fleshy, the lobes nude or fimbriated, destitute of glands on the petals. Stamens 5, on the corolla-tube; filaments equal at base; anthers erect, unchanged. Ovary girt by 5 glands, 1-celled; style mostly distinct, persistent; stigma 3-lobed. Capsules 1-celled opening at top by two valves.—*DC. Prod.* ix. p. 136.

Marsh-growing perennials, with entire, alternate leaves, the lower crowded and petioled. Flowers in cymes, yellow.—*V. ovata*, Vent., our only species, is common throughout the colony.

9. **LIMNANTHEMUM**, Gmel.

Calyx 5-parted; segments united at base. Corolla deciduous, rotate, submembranous, fugitive, 5-parted; segments variously fimbriated, on one side bearing glands. Stamens 5, on the tube; filaments equal at base; anthers erect, unchanged. Ovary girt by 5 glands, 1-celled; style short, persistent; stigma 2-lobed. Capsule 1-celled, valveless, opening after long maceration.—*DC. Prod.* vi. p. 138.

Perennial floating herbs, with the habit of *Nymphæa*. Leaves on very long petioles, floating, peltate or cordate. Flowers yellow, springing near the summit of the petiole.—2 Cape species, both Eastern.

## ORDER LXXXIV. CONVULVULACEÆ.

Corolla 5-parted or cleft, persistent. Corolla funnel- or bell-shaped, the limb 5-plaited or 5-lobed, twisted in bud. Stamens 5, alternate with the lobes of corolla; filaments broad-based; anthers 2-celled. An annular disk usually under the ovary. Ovary either single, 2-4-celled, rarely 1-celled, or of 2-4 separate carpels; ovules 1-2 in each cell or carpel. Style simple or 2-fid, rarely 2-parted. Fruit capsular or indehiscent, 1-4-celled; cells 1-2-seeded. Seeds glabrous or hairy; embryo (except in *Cuscutæ*) with leafy, wrinkled cotyledons, in mucilaginous albumen.—Stems herbaceous or ligneous, most commonly climbing or trailing. Leaves alternate, entire or lobed. Flowers large and handsome.

Tribe 1. CONVULVULÆ. Embryo with leafy cotyledons. Carpels united in a solid ovary. Capsule dehiscent. (Gen. 1-8.)

Style simple.

Ovary 3-4-celled.

Stigma capitate-2-lobed. Ovary 4-celled . . . 1. BATATAS.

Stigma capitate-granulated. Ovary 3-celled . . . 2. PHARBITIS.

Ovary 2-celled.

Sepals equal or subunequal.

Stigma capitate, 2-lobed . . . . . 3. IPOMÆA.

Stigmas 2, linear, revolute . . . . . 4. CONVULVULUS.

Sepals very unequal, imbricated in 2-3 rows, the

2 outer large and decurrent . . . . . 5. ANISEIA.

Ovary 1-celled (the young ovary sometimes half-2-celled).

Two opposite bracts enclosing the calyx . . . . . 6. CALYSTEGIA.

No enclosing bracts. Sepals unequal . . . . . 7. SHUTEREIA.

Style 2-fid, or 2 separate styles.

Styles 2, 2-fid. Leaves sessile, entire . . . . . 8. EVOLVULUS.

Tribe 2. DICHONDREÆ. Embryo with leafy cotyledons. Carpels 2-4 separate. (Gen. 9-10.)

Corolla 5-fid. Ovary 2-parted . . . . . 9. DICHONDRA.

Corolla crenate. Ovary 4-parted . . . . . 10. FALKIA.

Tribe 3. CUSCUTÆ. Embryo without evident cotyledons, worm-like. Carpels united. Plants parasitical, leafless.

Characters same as the tribe . . . . . 11. CUSCUTA.

TRIBE 1. CONVULVULÆ. (Gen. 1-8.)

1. BATATAS, Rumph.

Sepals 5. Corolla bell-shaped. Stamens included. Style single; stigma capitate, 2-lobed. Ovary 4-celled, or by abortion 3-2-celled.—*DC. Prod.* ix. p. 337.

Trailing or twining herbs or half-woody plants, sometimes with large

fleshy roots. The "Sweet Potato" (*B. edulis*) is the type of the genus. *B. paniculata*, or "Natal Cotton-plant," a widely-dispersed tropical species, grows at Natal. It has palmate, 5-7-fid leaves, many-flowered peduncles, purple flowers, and seeds covered with long coarse hairs.

## 2. PHARBITIS, Chois.

Sepals 5. Corolla bell- or bell-funnel-shaped. Style single; stigma capitate-granulate. Ovary 3-, rarely 4-celled; cells 2-ovuled.

Tropical and chiefly American plants.—*P. hispida*, Chois. (*Convolvulus major* of Garden), occurs as an escape from gardens.

## 3. IPOMŒA, Linn.

Sepals 5. Corolla bell- or funnel-shaped. Stamens included. Style 1; stigmas capitate, mostly 2-lobed. Ovary 2-celled; cells 2-seeded. Capsules 2-celled.—*DC. Prod. ix. p. 348.*

A very large, tropical and subtropical genus, very various in habit.—Many species on the Eastern frontier and in Natal.

## 4. CONVULVULUS, Linn.

Sepals 5. Corolla bell- or funnel-shaped. Style 1; stigmas 2, linear-cylindrical, often revolute. Ovary 2-celled; cells 2-ovuled. Capsule 2-celled.—*DC. Prod. ix. p. 399.*

A large genus, chiefly of temperate climates, varied in habit.—Several species, dispersed through the colony.

## 5. ANISEIA, Chois.

Sepals 5, in 2-3 rows, the 2 outer larger, inserted below the rest and decurrent on the peduncle, the third intermediate; and two inner ones smaller. Corolla bell-shaped. Style 1; stigma 2-lobed, capitate or often flattened. Ovary 2-celled; cells 2-ovuled. Capsules 2-celled.—*DC. Prod. ix. p. 429.*

Mostly tropical plants, differing from *Ipomœa* in the calyx.—*A. calystegioides*, Ch. (*Ipomœa crassipes*, Hook. Bot. Mag. t. 4068), grows at Natal.

## 6. CALYSTEGIA, R. Br.

Two opposite bracts concealing the calyx. Sepals 5, equal. Corolla bell- or funnel-shaped. Style 1; stigma 2-lobed, lobes linear or flattened. Ovary imperfectly 2-celled, becoming 1-celled.—*DC. Prod. ix. p. 433.*

Herbs, with the habit of *Convolvulus*, known at once by the bracts enclosing the calyx. To this genus belongs the common English White Hedge-convolvulus (*C. sepium*), extensively cultivated in temperate regions, and indigenous in Australia and Chili, as well as in England, but not in South Africa.

7. **SHUTEREIA**, Chois.

Sepals 5, unequal. Corolla bell-shaped. Style 1; stigma 2-lobed, lobes ovate, flattened. Capsules 1-celled, 4-seeded.—*DC. Prod.* ix. p. 435.

*S. bicolor*, Ch., is a villous twiner, with ovate-cordate, entire or sinuate-angled leaves, and bracteate, mostly 1-flowered peduncles. Outer sepals larger, enclosing the others. Corolla villous externally.—Seashores near Natal.

8. **EVOLVULUS**, Linn.

Sepals 5. Corolla bell- or funnel-shaped or rotate. Ovary 2-celled, 4-ovuled; styles 2, 2-fid; stigmas thickened. Capsules 2-celled.—*DC. Prod.* ix. p. 441.

Much-branched, small, diffuse, but not twining plants, mostly tropical. Leaves sessile, entire. Flowers capitate or scattered.

TRIBE 2. **DICHONDREÆ**. (Gen. 9-10.)9. **DICHONDRA**, Forst.

Calyx 5-parted. Corolla bell-shaped, 5-fid. Ovary 2-parted; styles 2; stigmas thickened.—*DC. Prod.* ix. p. 451.

Small, prostrate herbs, with reniform-cordate, pubescent or silky leaves, and short, 1-flowered peduncles.—*D. repens* is found at the Cape.

10. **FALKIA**, Linn.

Calyx 5-toothed or 5-parted. Corolla tubular-bell-shaped, crenate. Ovary 4-parted; styles 2; stigmas globose.—*DC. Prod.* ix. p. 451.

A small, prostrate herb, with cordate-spathulate, glabrous, long-petioled leaves, and short, 1-flowered peduncles.—Common through the colony.

TRIBE 3. **CUSCUTEÆ**.11. **CUSCUTA**, Tourn.

Calyx 5-, rarely 4-fid. Corolla globose-urceolate or tubular; limb 5-, rarely 4-fid. Stamens 5-4, attached to the tube of the corolla, alternate with its lobes, usually subtended by as many scales attached to the base of the corolla. Ovary 2-celled, 4-ovuled; styles 2, rarely connate; stigmas various. Fruit capsular or indehiscent. Embryo spiral or curved, filiform, more or less spirally twisted within the albumen; cotyledons obsolete.—*DC. Prod.* ix. p. 452; *Thes. Cap.* t. 39, and t. 119.

Parasitical, thread-like, leafless herbs, germinating in the soil, but soon attaching themselves by disk-like suckers to the stems of neighbouring plants; when this occurs, the primary root withers away, and the parasite thenceforth draws its nourishment from the plant to which it has fixed itself. Flowers white, small but pretty, and often very sweetly scented.—There are several Cape species.

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ORDER LXXXV. **HYDROPHYLLACEÆ?**

(The genus *Codon*, of doubtful affinity, is referred here by A. De Candolle.)

1. **CODON**, Royen.

Calyx 10-12-parted, the lobes subulate, erect, the alternate rather smaller. Corolla bell-shaped, rather longer than the calyx, 10-12-lobed, the lobes oblong, obtuse, imbricate in bud, the alternate rather smaller. Stamens 10-12, in the base of the corolla, the alternate shorter; filaments dilated at base, subulate; anthers 2-celled, incumbent, obtuse, much shorter than the filament. Ovary ovoid-acute, glabrous, imperfectly 2-celled, with 2 parietal, many-ovuled placentas nearly meeting in the middle; style semi-2-fid; stigmas slender. Capsules enclosed in the persistent calyx, loculicidally splitting into 2 valves.—*DC. Prod. x. p. 588; Andr. Rep. t. 325.*

A rigid annual, in all parts sprinkled with sharp white prickles. Leaves alternate, petioled, ovate-oblong, repand, somewhat fleshy, with the prickles chiefly at the margins and on the petioles. Flowers solitary or subracemose. Corolla large, white variegated with purple.—Found in the Karroo and on the Northern frontier.

ORDER LXXXVI. **SOLANEÆ.**

Calyx 5, rarely 4-6-10-parted, persistent. Corolla 5-fid, regular, equal, deciduous; æstivation plaited or imbricate. Stamens inserted on the corolla, alternate with its lobes and as many; sometimes one abortive. Ovary 2-celled, rarely 1-celled; ovules mostly indefinite; style continuous; stigma obtuse. Fruit a capsule or berry. Seeds with much albumen, and often an excentric embryo.—Herbs shrubs or trees, with alternate, exstipulate leaves. Inflorescence cymose or forked, rarely a true raceme. Properties more or less narcotic; the Tobacco, Nightshade, Cape Gooseberry, Capsicum, Tomato, and Potato, are familiar examples.

Fruit a many-seeded berry.

Anthers opening by terminal pores . . . . . 1. **SOLANUM.**

Anthers splitting lengthwise.

Calyx enlarged and inflated in fruit.

Enlarged calyx 5-parted, with sagittate segments;  
ovary 3-5-celled . . . . . 2. **NICANDRA.**

Enlarged calyx deeply 5-fid, with subulate segments; ovary 2-celled . . . . . 4. **WITHANIA.**

Enlarged calyx 5-toothed, 5-angled, closing over the fruit; ovary 2-celled . . . . . 3. **PHYSALIS.**

Calyx unaltered after flowering; corolla funnel-shaped or tubular . . . . . 5. **LYCIUM.**

Fruit a many- or few-seeded capsule.

Calyx deciduous, tubular; capsule thorny, 4-celled . . . 6. *DATURA*.

Calyx persistent.

Calyx bell-shaped, 5-fid; corolla funnel-shaped; capsule 2-celled, many-seeded . . . . . 7. *NICOTIANA*.

Calyx deeply 5-lobed, lobes acuminate, unequal; corolla long-tubular; capsule 2-celled, few-seeded . . . 8. *RETZIA*.

### 1. *SOLANUM*, Linn.

Calyx 5-(rarely 4–6–10-)parted, cleft, toothed or crenate, or subentire. Corolla rotate or cup-like, with a short tube, and a plaited, spreading 5-fid or -angled limb. Stamens in the throat, exserted; filaments short; anthers free or rarely connate, opening by terminal pores. Berry 2-(rarely 3–4-)celled, many-seeded. Embryo peripheric, spiral.—*DC. Prod.* xiii. p. 27.

A vast, chiefly tropical and subtropical genus of herbs shrubs or trees, often very ornamental; many prickly or spiny, glabrous or hairy, with simple or stellate pubescence. Leaves penninerved or palminerved, entire or variously cut or lobed. Cymes at first terminal, often becoming lateral or extra-axillary by subsequent growth.—33 Cape species are described in *DC. Prod.*; but several, from Natal and Zululand, are yet undescribed.

### 2. *NICANDRA*, Adans.

Calyx 5-parted, 5-angled, inflated, the angles compressed, the segments sagittate. Corolla bell-shaped, with a plaited, subentire, 5-angled limb. Stamens subexserted; filaments with dilated bases, connivent; anthers ovate, splitting. Ovary 3–5-celled, many-ovuled; style simple; stigma subcapitate. Fruit a 3–4-celled, dry berry, enclosed in the inflated calyx.—*DC. Prod.* xiii. p. 433.

*N. physaloides*, Gært., originally from Peru, is now naturalized in most warm countries, including our Eastern districts and Natal. It is a branching annual, with angular branches, glabrous, ovate oblong, sinuous leaves, and 1-flowered, lateral peduncles.

### 3. *PHYSALIS*, Linn.

Calyx 5-fid or 5-toothed, vesicular after flowering. Corolla rotate-bell-shaped, plaited, with a 5-angled limb. Stamens included; filaments free, filiform; anthers erect, connivent, splitting. Ovary 2-celled, many-ovuled; style simple; stigma capitate. Berry globose, 2-celled, concealed in the inflated, nearly closed, 5-angled calyx.—*DC. Prod.* xiii. p. 434.

Annual or perennial herbs, with entire or angle-lobed leaves, and solitary, lateral flowers. *P. Peruviana*, "the Cape Gooseberry," is naturalized throughout the colony, and *P. Hermannii*, Dun., occurs at Natal.

4. **WITHANIA**, Pauquy.

Calyx bell-shaped, 5-fid or 5-parted, the segments subulate, inflated after flowering, and more or less covering the berry. Corolla bell- or funnel-shaped or subrotate, longer than the calyx, 5-fid. Stamens included; filaments subulate, often dilated at base; anthers oblong, splitting. Ovary clasped by a thin, glandular disk, 2-celled, many-ovuled. Style simple; stigma capitate. Berry globose, 2-celled, more or less concealed in the inflated calyx.—*DC. Prod.* xiii. p. 453.

*W. somnifera*, Dun., a common Mediterranean and Indian weed, occurs in the Eastern district and at Natal. It is perennial, half-woody, more or less hairy with soft, stellate hairs, with ovate or obovate, entire, obtuse leaves, and clustered, short-stalked flowers, producing small, red berries.

5. **LYCIUM**, Linn.

Calyx 5-toothed or 3-5-fid. Corolla funnel-shaped or tubular, the limb 5-10-fid or toothed, sometimes plaited. Stamens inserted in the middle or near the base of the corolla-tube, included or exserted; anthers splitting. Ovary 2-celled, many-ovuled; style simple; stigma subcapitate. Berry 2-celled.—*DC. Prod.* xiii. p. 508.

Small trees or shrubs, often spiny, with very rigid, divergent branches and twigs. Leaves alternate, entire, sometimes tufted. Peduncles axillary or terminal, solitary, in pairs or umbellate, rarely corymbose.—17 Cape species are described in *DC. Prod.*, dispersed.

6. **DATURA**, Linn.

Calyx tubular, often angular, 5-fid at the summit or splitting down one side, at length circularly separating above the base, the upper part falling off. Corolla funnel-shaped, with a spreading 5-toothed, plaited limb, twisted in bud. Stamens included or subexserted; anthers splitting. Ovary imperfectly 4-celled; style simple. Capsule rough or thorny, 4-celled, 4-valved.—*DC. Prod.* xiii. p. 538.

Poisonous and fetid, herbaceous or arborescent plants. *D. Stramonium*, Linn., "the Thorn-apple," is a naturalized weed at the Cape.

7. **NICOTIANA**, Tourn.

Calyx tubular-bellshaped, semi-5-fid. Corolla funnel- or salver-shaped, the limb plaited, 5-lobed, twisted in bud. Stamens included; anthers splitting. Ovary 2-celled, many-ovuled; style simple; stigma capitate. Capsule in the persistent calyx, 2-celled.—*DC. Prod.* xiii. p. 556.

*N. Tabacum*, Linn., "the Virginian Tobacco," is the type of this genus, which includes annuals, perennials, shrubs, and trees, chiefly American. *N. fruticosa*, Linn., a very obscure species, is said, but probably incorrectly,

to be South African; and *N. glauca*, Grah., a glaucous species, from Buenos Ayres, has been extensively cultivated, and is now, in some places, naturalized at the Cape. No truly indigenous Cape species is known to me.

### 8. RETZIA, Thunb.

Calyx 5-fid, the lobes lanceolate, acuminate, unequal. Corolla with a long tube, 5-lobed at summit, the lobes imbricate-twisted. Stamens in the throat; filaments short; anthers splitting. Ovary oblong, glabrous, 2-celled; ovules few (1-4) in each cell; style filiform, equalling the corolla-tube; stigma 2-lobed. Fruit an oblong, 2-celled, 2-valved, few-seeded capsule. Embryo straight, subterete, in fleshy albumen.—*DC. Prod.* xiii. p. 581.

A rare and little-known shrub, found by Thunberg between Hott. Holl. Kloof, and the How Hoek. Leaves crowded, sessile, lance-linear, rigid, erect, quite entire, the lower glabrous, upper pubescent. Flowers sessile among the upper leaves; yellowish?

## ORDER LXXXVII. SCROPHULARIACEÆ.

Calyx 4-5-lobed or parted, free, persistent. Corolla usually irregular and 2-labiate or personate, sometimes subequal, 5 or rarely 4-6-7-lobed. Stamens 4, didynamous, rarely equal, sometimes only 2; anthers 2- or 1-celled. Ovary 2-celled; ovules many in each cell; style simple; stigma 2-lobed or entire. Fruit capsular, rarely fleshy. Seeds albuminous.—Herbs shrubs or trees, some found in all countries, very varied in habit. Inflorescence cymose or racemose.

Suborder 1. **Antirrhinidæ.** Corolla with imbricate-2-labiate æstivation, the back-lobe outermost.

\* *Corolla saccate or spurred at base.*

Tribe 1. **HEMIMERIDÆ.** Corolla rotate, rarely tubular or personate; capsule splitting into 2 valves.

Corolla with 2 pouches or spurs at base.

Stamens 2; corolla expanded, 4-lobed, yellow. . . 1. **HEMIMERIS.**

Stamens 4 (the 2 front ones very rarely barren).

Corolla expanded or concave; filaments of the front stamens curved round at base . . . 2. **DIASCIA.**

Corolla with a very wide tube; stamens declinate . . . 3. **COLPIAS.**

Corolla personate with a single pouch or spur at base.

Capsule compressed, septicidal; valves boat-shaped . . . 4. **NEMESIA.**

Capsule subglobose, loculicidal . . . 5. **DICLIS.**

Tribe 2. **ANTIRRHINÆ.** Corolla tubular; capsule opening by pores.

Corolla personate, spurred at base . . . 6. **LINARIA.**

\*\* *Corolla neither saccate nor calcarate at base.*

Tribe 3. CHELONEÆ. Calyx-lobes or segments imbricate in æstivation. Corolla tubular, tube long or ovoid-inflated.—Inflorescence compound. Stamens 4; in *Ixianthes* the two anterior barren.

Calyx 5-parted.

Fruit capsular, dehiscent.

Corolla-tube long, incurved, limb short, oblique; stamens declined, exerted; capsule very oblique . . . . .

7. PHYGELIUS.

Corolla-tube ovoid-ventricose, limb 2-labiate, the upper lip galeate, erect, 2-dentate, lower inflated, 3-lobed . . . . .

8. BOWKERIA.

Corolla tubular, limb sub-2-labiate, all the segments spreading, flat; stamens ascending; capsule ovate or oblong . . . . .

10. FREYLINIA.

Fruit an indehiscent berry; corolla-lobes 5, spreading, flat . . . . .

11. TEEDIA.

Calyx bell-shaped, 4-5-lobed or toothed.

Calyx wide, cup-like, shortly 3-5-lobed; corolla tubular, wider upwards, limb oblique, with 5, broad, short, flat lobes . . . . .

9. HALLERIA.

Calyx semi-5-fid; corolla-tube short, limb 2-labiate, the upper lip 2-fid, with flat lobes; the lower very large, concave, boat-like, very shortly 3-fid at apex . . . . .

12. ANASTRABE.

Calyx deeply 2-lipped, the upper lip 3-fid, lower 2-parted; corolla-tube wide, short, inflated, upper lip erect, shortly 2-fid, lower flat, widely 3-lobed . . . . .

13. IXIANTHES.

Tribe 4. ESCOBEDIEÆ. Calyx ample, 5-toothed or 5-lobed, valvate in æstivation.—Inflorescence centripetal, peduncles oppositely 2-bracteate.

Calyx loosely ovate-campanulate, angular, inflated; corolla funnel-bell-shaped, with wide, spreading lobes . . . . .

14. MELASMA.

Calyx bell-shaped, 5-toothed or 5-fid; corolla bell-shaped or globose, with a widely 5-lobed, oblique limb . . . . .

15. ALECTRA.

Tribe 5. GRATIOLEÆ. Calyx-lobes imbricate in æstivation. Corolla tubular or very rarely rotate.—Inflorescence centripetal (spiked or racemose), very rarely (in *Manulea*) irregularly compound.

\*Leaves all (even the lowest) alternate.

Prostrate or densely tufted; leaves crowded; flowers axillary, sessile; capsule short, compressed upwards, obcordate . . . . .

16. APTOSIMUM.

Rigid, much branched, often viscid; leaves alternate; flowers axillary or subracemose; capsules ovate-oblong, acute . . . . .

17. PELIOSTOMUM.

\*\*Leaves, or at least the lower ones, opposite.

Anthers 1-celled.

Calyx 2-labiate.

Anthers of the 2 upper stamens larger, included; of the 2 lower in the throat, small or deficient . . . . .

18. NYCTERINIA.



- Anthers all alike, exserted; bract adnate to the pedicel . . . . . 19. POLYCARENA.
- Calyx subequally 5-fid; anthers all alike, exserted; bract adnate to the pedicel . . . 20. PHYLLOPODIUM.
- Calyx 5-parted; bracts free from pedicel.
- Corolla subrotate, with a very short tube . . 21. SPHENANDRA.
- Corolla not rotate; somewhat funnel- or salver-shaped.
- Corolla-tube dilated in the throat, short or long . . . . . 22. CHÆNOSTOMA.
- Corolla viscid, tube incurved or gibbous at the apex . . . . . 23. LYPERIA.
- Corolla-tube straight, not dilated in the throat . . . . . 24. MANULEA.
- Anthers 2-celled.
- All the stamens inserted in the corolla-tube; calyx 5-parted, the back segments larger; stamens 4, perfect . . . . . 25. HERPESTIS.
- The anterior stamens inserted in the throat of the corolla, either sterile or toothed at base.
- Calyx tubular, obliquely 5-toothed; anterior stamens antheriferous, arched . . . . . 26. TORENIA.
- Calyx 5-parted; anterior stamens reduced to unequally 2-lobed rudiments . . . . . 27. ILYSANTHES.
- Suborder 2. **Rhinanthideæ.** Corolla imbricate in æstivation, the back lobe never outermost in bud.
- \* *Flowers axillary, solitary or fascicled, rarely cymose.*
- Tribe 6. **SIBTHORPIEÆ.** Leaves alternate or with the flowers tufted at the nodes, rarely opposite, not connate; floral leaves either similar or the upper smaller.
- Creeping or aquatic herbs.
- Calyx 3-lobed; corolla minute, 5-fid; anthers 2-celled . . . . . 28. GLOSSOSTIGMA.
- Calyx 5-toothed; corolla rotate-bellshaped, 5-fid; anthers 1-celled . . . . . 29. LIMOSELLA.
- Erect herbs or undershrubs.
- Corolla tubular, limb 5-lobed, sub-2-labiate; anthers 1-celled . . . . . 30. CAMPTOLOMA.
- Corolla rotate, 4-fid; anthers 2-celled . . . . . 31. SCOPARIA.
- \*\* *Inflorescence racemose, centripetal.*
- Tribe 7. **VERONICEÆ.** Stamens 2 (or 4 distant); anthers 2-celled.
- Corolla subequally 4-fid, with a short tube and spreading limb . . . . . 32. VERONICA.
- Tribe 8. **BUCHNEREÆ.** Stamens 4, approaching in pairs; anthers 1-celled.
- Calyx tubular or bell-shaped, 5-fid or toothed.
- Capsule straight, dry; limb of corolla short.
- Corolla-limb subequally 5-fid . . . . . 33. BUCHNERA.
- Corolla-tube incurved, limb 2-labiate, spreading . . . 34. STRIGA.
- Capsule straight, fleshy; limb of corolla very large; calyx-tube long, 5-toothed . . . . . 35. CYCNIUM.

- Capsule ovate, obliquely rostrate; calyx bell-shaped; corolla with a long slender tube, and ample 5-parted limb . . . . . 36. RHAMPHICARPA.  
 Calyx deeply 5-parted; corolla clavate-tubular, galeate, incurved at apex, obliquely open in front, limb obsolete . . . . . 37. HYOBANCHE.

Tribe 9. GERARDIÆ. Stamens 4, approaching in pairs; anthers 2-celled, cells often mucronate, either equally fertile or one smaller and sterile.

Style gradually thickening into a club-shaped stigma.

Anther-cells but slightly unequal; anthers free . 38. GRADERIA.

Anther-cells very unequal.

Corolla funnel- or rotate-bellshaped; branching, slender annuals or perennials . . . . . 39. SOPUBIA.

Corolla tubular, tube incurved, limb spreading; leafless, highly coloured, root-parasites . . 40. AULAYA.

Style abruptly thickened into a capitate stigma; calyx inflated; corolla-tube long, incurved, limb 2-labiate; a leafless root-parasite . . . . . 41. HARVEYA.

Tribe 10. EUPHRASIÆ. Upper lip of the corolla galeate or concave, erect. Stamens 4; anthers 2-celled.

Calyx inflated-bellshaped, shortly 4-lobed; capsule turgid, with thick placentas; leaves opposite;

flowers yellow . . . . . 42. TRIXAGO.

## SUBORDER 1. **Antirrhinidæ.**

### TRIBE 1. HEMIMERIDÆ. (Gen. 1-5.)

#### 1. **HEMIMERIS**, Thunb.

Calyx 5-parted. Corolla expanded, sub-2-labiate, 4-fid, the upper segment very shortly emarginate, the lower segment very large, the lateral short and wide; 2 pouches at the base of the lower lip, and 2 tooth-like appendages, clasping the stamens at the side of the throat. Stamens 2; anthers 1-celled. Capsule subglobose, septicidally 2-partible. — *DC. Prod. x. p. 253.*

Small, diffuse annuals. Leaves opposite. Peduncles axillary, 1-flowered, deflexed after flowering; flowers yellow.—3 species, Western.

#### 2. **DIASCIA**,\* Link and Otto.

Calyx 5-parted. Corolla expanded or concave, the upper lip 2-fid; lower 3-fid, the medial lobe often emarginate, all wide; the throat, under the upper lip, furnished with 2 hollows, sacs or spurs, without appendage. Stamens 4, didy-

\* I omit *Schistanthe*, Kze. (*DC. l. c. p. 251*), as probably founded in error; it is thus characterized:—"Calyx 5-parted, unequal. Corolla resupinate, the limb expanded, 5-fid, the back (apparently front) lobes separate even to the base of the corolla, the throat under the antal lip 2-saccate. Capsules ovate, obtuse, emarginate, septicidal." Said to resemble *Alonzoa incisifolia*; possibly only a monstrous state of that common garden plant.

namous, the filaments of the lower ones curved round at base and clasping the upper, sometimes dilated and appendiculate, rarely without anthers; anthers 1-celled, mostly cohering. Capsule subglobose or elongate, obtuse, not compressed, septical.—*DC. Prod.* x. p. 256.

Annual or rarely perennial herbs, the lower or all the leaves opposite. Pedicels axillary and solitary, or the upper tufted and racemose. Flowers often red.—21 species, dispersed.

### 3. COLPIAS, E. Mey.

Calyx 5-parted. Corolla-tube ample, declinate at base, incurved ascending, 2-gibbous or shortly 2-saccate in front; limb with 5 subequal, broad, spreading lobes. Stamens 4, short, declined, didynamous; filaments incurved but not circumflexed; anther-cells at length confluent. Style emarginate. Capsule ovoid, acuminate, septical, with 2-fid valves.—*DC. Prod.* x. p. 259.

A branching shrublet, softly hairy. Leaves petioled, roundish-cordate, toothed or cut. Peduncles axillary, 1-flowered; corolla about 8 lines long.—Namaqualand.

### 4. NEMESIA, Vent.

Calyx 5-parted. Corolla personate, the upper lip 4-fid, lower entire or emarginate, palate convex, the throat, under the palate, prolonged into a single pouch or spur. Stamens 4, didynamous, the lower filaments curved round at base and clasping the upper; anthers 1-celled, mostly cohering in pairs. Capsule compressed, septically 2-valved, the valves boat-shaped, somewhat keeled.—*DC. Prod.* x. p. 260.

Herbs, annual or perennial, rarely halfshrubby. Leaves opposite. Flowers racemose, rarely axillary; corolla yellow white violet or particoloured.—28 species, dispersed.

### 5. DICLIS, Benth.

Calyx 5-parted. Corolla personate, the upper lip 2-fid, lower 3-fid, the tube under the upper lip 1-spurred. Stamens as in *Nemesia*. Capsules subglobose, emarginate, loculicidally 2-valved, the valves entire or scarcely cloven.—*DC. Prod.* x. p. 264.

Creeping herbs, mostly turning black in drying. Leaves opposite, petiolate, toothed. Pedicels solitary, axillary, 1-flowered.—2 South African species, Eastern and at Natal.

## TRIBE 2. ANTIRRHINEÆ. (Gen. 6.)

### 6. LINARIA, Juss.

Calyx deeply 5-parted. Corolla personate, tube spurred at base, upper lip erect, with a prominent, large or small palate.

Stamens 4, didynamous; anthers 2-celled, cells oblong. Capsules ovoid or globose, cells opening by one or more valved-pores, the lower cell rarely small and indehiscent.—*DC. Prod.* x. p. 266.

*L. spuria*, Mill., a widely-dispersed plant, of European origin, is common on rubbish heaps, etc., about Capetown. It is a much-branched, diffuse, villous annual, with alternate, roundish cordate leaves, and axillary, long-pedicelled flowers.

### TRIBE 3. CHELONEÆ. (Gen. 7-13.)

#### 7. PHYGELIUS, E. Mey.

Calyx 5-parted. Corolla-tube elongate, incurved, the limb oblique, with short, rounded lobes. Stamens 4, declined, exserted, a minute rudiment of a fifth at base of corolla; anther-cells parallel, scarcely confluent at summit. Capsules very oblique, with the after-cell much larger, slowly opening septicidally at the apex. ?—*DC. Prod.* x. p. 300.

A glabrous halfshrub, with 4-angled stems, opposite, petioled, ovate or ovato-lanceolate leaves, and cymoso-paniculate, scarlet flowers.—Witberg and Natal.

#### 8. BOWKERIA, Harv.

Calyx 5-parted; segments unequal, the back one wider, imbricate in bud. Corolla ovoid-ventricose, 2-labiate, the upper lip galeate, erect, 2-toothed, lower inflated-cymbiform, 3-lobed at apex. Stamens 4, in the base of the corolla, didynamous, included (with a fifth rudiment); anthers 2-celled, the cells equal, parallel, pointless. Ovary 2-(rarely 3-)celled; ovules numerous; style filiform; stigma simple. Capsules not seen.—*Thes. Cap. t.* 37.

Shrubs, glabrous or hairy, subviscid, with opposite or 3-nate broad, toothed, veiny, rigid leaves, and terminal, few-flowered cymes. Flowers red ?—2 species, from the Eastern district and Natal.

#### 9. HALLERIA, Linn.

Calyx cuplike-bellshaped, with 3-5 broad, short lobes. Corolla tubular, widening upwards, with an oblique, shortly 5-lobed limb, the lobes flat. Stamens 4, scarcely declined, mostly exserted or subexserted; anther-cells distinct. Fruit fleshy, indehiscent, with fleshy placentas at length filling the cavity.—*DC. Prod.* x. p. 301.

Glabrous shrubs. Leaves ovate or oblong. Pedicels mostly tufted; corolla red.—3 species, dispersed.

#### 10. FREYLINIA, Colla.

Calyx 5-parted. Corolla tubular, the 5-lobed limb sub-2-labiate, all the segments spreading and flattish. Stamens 4,

ascending; anther-cells parallel, subdistinct; a short rudiment of the fifth stamen in base of corolla. Style capitate, stigmatose at the apex. Capsules ovate or oblong, septicidal, the valves leathery, 2-fid.—*DC. Prod.* x. p. 333.

Shrubs, mostly glabrous. Leaves opposite or the upper scattered, entire, shining. Panicles or racemes terminal; flowers orange or lilac.—4 species, dispersed.

#### 11. **TEEDIA**, Rud.

Calyx 5-parted. Corolla tubular; limb with 5 spreading, flattish lobes. Stamens 4, ascending; anther-cells parallel, distinct. Style short, thickly capitate at apex. Berry 2-celled, indehiscent. Seeds numerous.—*DC. Prod.* x. p. 334.

Small shrubs with opposite, ovate leaves, and few-flowered cymes in the upper axils, forming a leafy thyrus. Flowers red.—2 species, from the Western and Northern districts.

#### 12. **ANASTRABE**, E. Mey.

Calyx bell-shaped, semi-5-fid. Corolla with a short tube and 2-labiate limb, the upper lip 2-fid, with flat lobes, the lower very large, concave, cymbiform, patent, shortly 3-fid at the apex. Stamens 4, subascendent; anther-cells confluent at apex. Style truncate or emarginate. Capsule ovate-oblong, septicidal, the valves leathery, 2-fid.—*DC. Prod.* x. p. 334.

A shrub, with opposite, petioled, quite entire or serrulate leaves shining above, white beneath. Flowers in axillary or terminal, many-flowered, corymbose cymes, tomentose.—1 or 2 species from Natal

#### 13. **IXIANTHES**, Benth.

Calyx very deeply 2-lipped, the upper lip 3-fid, lower 2-parted. Corolla-tube short, ample; upper lip erect, shortly 2-fid; lower spreading, ample, flat, broadly 3-lobed. 2 anterior stamens fertile, ascending, their anther-cells thick, divaricated; 2 back stamens short, with small, empty anthers; a very short rudiment of a fifth stamen. Style subentire. Capsule septicidally 2-parted, the valves shortly 2-fid, carrying placentas on their inflexed margins.—*DC. Prod.* x. p. 335; *Thes. Cap.* t. 99.

A densely leafy shrub, the young parts hairy. Leaves 3-4 in a whorl, linear-lanceolate, distantly toothed beyond the middle. Peduncles axillary, 1-flowered, 2-bracteate in the middle. Calyx rigid. Corolla viscid externally.

#### TRIBE 4. ESCOBEDIEÆ. (Gen. 14-15.)

#### 14. **MELASMA**, Berg.

Calyx\* loosely ovate-campanulate, leafy, angular, then in-



flated, 5-fid at the apex. Corolla funnel-shaped; limb 5-lobed, the lobes wide, spreading. Stamens 4, shorter than the corolla, subdidynamous; anther-cells apiculate at base. Stigma entire, thickened-tongueshaped. Capsule with entire valves.—*DC. Prod. x. p. 337.*

Scabrid or hispid herbs, with opposite, sessile, entire or toothed leaves. Racemes leafy. Corolla pale.—2 South African species, dispersed.

### 15. **ALECTRA**, Thunb.

Calyx bell-shaped, leafy, shortly or beyond the middle 5-fid. Corolla bell-shaped or subglobose; limb oblique, broadly 5-lobed. Stamens 4, didynamous, shorter than the corolla; anthers mostly dorsally bearded, cells mucronate or bristle-tipped at base. Style long, incurved; stigma thickened-tongueshaped, entire or emarginate. Capsule with entire or at length 2-fid valves.—*DC. Prod. x. p. 337.*

Annuals, rarely root-parasites, with opposite leaves, turning black in drying. Flowers dull-coloured, veiny, in terminal, leafy spikes or racemes.—5 South African species, dispersed.

## TRIBE 5. GRATIOLEÆ. (Gen. 16–27.)

### 16. **APTOSIMUM**, Burch.

Calyx 5-fid. Corolla tubular, with a long, wide throat and spreading, 5-lobed limb; the lobes rounded, flat, equal. Stamens 4, didynamous, included; anthers externally ciliate-hispid, the cells confluent, opening by a single transverse line; those of the back pair often empty. Stigma minutely emarginate. Capsule short, compressed at the apex, obcordate, the valves shortly loculicidal and septicidal at the apex, adhering at base to the placentiferous column.—*DC. Prod. x. p. 344.*

Very dwarf, prostrate or densely-tufted plants, with ligneous or herbaceous stems. Leaves crowded, quite entire, 1-nerved. Flowers sessile, axillary, 2-bracteate; corolla veiny, mostly blue or bluish.—6 South African species, dispersed.

### 17. **PELIOSTOMUM**, E. Mey.

Floral characters as in *Aptosimum*. Capsule ovate-oblong, acute, subcompressed at apex, 2-furrowed, the valves to the very base loculicidal, 2-fid or 2-parted, exposing the entire placentiferous column.—*DC. Prod. x. p. 346.*

Small, rigid, often viscid, branching herbs or undershrubs. Leaves scattered, entire. Flowers axillary or shortly racemose at the ends of the twigs, sessile or pedicellate.—5 species, chiefly from the Northern frontier. They differ in habit from the *Aptosima*, as well as in fruit.

## 18. NYCTERINIA, Don.

Calyx ovate-tubular, shortly 5-toothed, 2-labiate or 2-parted. Corolla persistent, with a long tube, at length split at base; the throat equal, often hispid; limb 5-lobed, spreading, lobes 2-fid or entire. Back stamens included, with oblong, erect anthers; anterior stamens in the throat, with small, transverse, mostly empty anthers or 0. Capsule leathery or membranous, loculicidally 2-valved, oblong, the valves shortly 2-fid.—*DC. Prod. x. p. 348; Thes. Cap. t. 58.*

Annual or perennial, somewhat woody herbs, more or less viscid, turning black in drying. Lower leaves opposite, upper alternate, dentate; the floral often appressed or adnate to the calyx. Flowers in terminal spikes, sessile.—16 species, dispersed.

## 19. POLYCARENA, Benth.

Calyx membranous, 2-labiate, 2-parted in fruit. Corolla persistent, the tube at length split; the throat wider; lobes of the limb entire. Stamens 4, didynamous; anthers all similar, exserted. Capsule membranous, ovate.—*DC. Prod. x. p. 350.*

Small annuals, mostly viscid. Lower leaves opposite, upper alternate, the floral adnate to the short pedicel. Flowers subsessile, small, in terminal spikes, lengthening as the flowers open.—10 species, dispersed.

## 20. PHYLLOPODIUM, Benth.

Calyx membranous at base, subequally 5-fid or 5-parted. Corolla subpersistent, funnel-shaped, with a short tube; lobes of limb entire. Stamens 4, exserted; anthers alike. Capsule membranous, ovate or oblong.—*DC. Prod. x. p. 352.*

Small, rigid, diffuse annuals, turning black in drying. Floral leaf adnate to the very short pedicel or the calyx. Flowers mostly small, in spikes, which are subcapitate at first, afterwards lengthened out.—7 species, dispersed.

## 21. SPHENANDRA, Benth.

Calyx 5-parted. Corolla deciduous, with a very short tube, and rotate 5-parted limb, the lobes entire. Anthers 4, exserted, all similar, reniform. Capsule ovate or oblong.—*DC. Prod. x. p. 353.*

A subperennial or annual plant, erect, viscidly hairy. Leaves mostly opposite, oblong-lanceolate; the floral free from the pedicel, short, ovate, entire, very acute. Corolla violet.—Eastern district.

## 22. CHÆNOSTOMA, Benth.

Calyx 5-parted. Corolla deciduous, funnel- or salver-shaped, more or less widened at the throat, rarely with a short tube,

bell-shaped; lobes of limb entire. Stamens 4; anthers similar, in the throat or exserted.—*DC. Prod.* x. p. 353.

Herbs or undershrubs, often much-branched and twiggy. Leaves mostly opposite, mostly toothed; the floral similar or bract-like. Flowers axillary or racemose, pedicellate, not turning black in drying.—26 species, dispersed.

### 23. *LYPERIA*, Benth.

Calyx 5-parted, the segments linear, not membranous. Corolla deciduous, the tube long, externally viscid, dorsally gibbous or incurved at the apex; throat not dilated; limb 2-labiate, the lobes entire or emarginate. Stamens 4, similar, included. Stigmas clavate-capitate.—*DC. Prod.* x. p. 357.

Herbs or small shrubs, often much branched. Lower leaves opposite; upper alternate, entire, toothed or much cut, often tufted in the axils, sometimes minute, blackening in drying. Flowers axillary, spiked or racemose. Capsule viscid.—30 species, dispersed.

### 24. *MANULEA*, Linn.

Calyx 5-parted or deeply 5-fid, the lobes linear or subulate. Corolla deciduous, with a long, glabrous or tomentose tube, nearly straight at apex, the throat not dilated; limb 5-parted, equal, or the upper segments approaching or connate. Stamens 4, included, all fertile, or the 2 anterior with small, empty anthers. Stigmas subclavate, entire.—*DC. Prod.* x. p. 363; *Thes. Cap. t.* 197.

Herbs, rarely woody. Leaves mostly crowded at the base of the stem; the floral small, bract-like, free. Flowers racemose, the racemes simple or compound. Corolla mostly orange, not blackening in drying, honey-scented. Capsule glabrous.—25 species, dispersed.

### 25. *HERPESTIS*, Gærtn.

Calyx 5-parted, the back lobe wider, sometimes very large, the lateral inner and narrower, often very narrow. Corolla with the upper lip emarginate or 2-fid, the lower 3-lobed; sometimes all the lobes subequally spreading. Stamens 4, didynamous contiguous and ascending, or subdistant; anthers 2-celled, the cells parallel or divaricate. Stigmas concave-dilated or shortly 2-lobed. Capsule 2-furrowed, the valves 2-parted or subentire, with inflexed margins, exposing the entire, placentiferous column.—*DC. Prod.* x. p. 392.

A very large tropical genus, of various habit.—*H. Monniera*, H. B. K., our only species, is a very common marsh plant in hot countries. It is a small, creeping herb, with obovate or spatulate, entire or distantly crenate nearly nerveless leaves, and axillary, pedicelled flowers.

26. **TORENIA**, Linn.

Calyx tubular, plaited or winged, obliquely 5-toothed or 2-labiate. Corolla ringent; the upper lip emarginate or 2-fid; lower larger, 3-fid. Back stamens fertile, the anterior ones arched, antheriferous, with a tooth-like or filiform appendage at base; anthers closely approaching or cohering in pairs. Stigma sub-2-lamellate. Capsule oblong, not exceeding the calyx.—*DC. Prod.* x. p. 409.

Mostly plants of tropical Asia. Leaves opposite. Racemes mostly short, terminal or in the forks.—*T. nana*, Benth., our only species, is a minute plant, found by Drege, near Natal.

27. **ILYSANTHES**, Rafin.

Calyx 5-parted, the lobes scarcely imbricate in bud. Corolla with the upper lip short, erect, 2-fid; the lower larger, spreading, 3-fid. Two back stamens fertile; rudiments of the anterior ones 2-lobed, one lobe glandular, obtuse, the other acute, either very short and tooth-like or elongate, rarely bearing an empty anther. Capsule ovate or oblong, equalling or exceeding the calyx.—*DC. Prod.* x. p. 418.

Small annuals, growing in wet spots, American and Asiatic.—*I. Capensis*, Benth., our only species, grows from Capetown to Port Natal. Leaves opposite, lanceolate or ovate, entire or dentate. Flowers axillary, pedicelled, bluish-white, with 2 blue spots on the palate.

SUBORDER 2. **Rhinanthideæ.**TRIBE 6. **SIBTHORPIEÆ.** (Gen. 28–31.)28. **GLOSSOSTIGMA**, Arn.

Calyx bell-shaped, short, very bluntly 3-lobed, the back lobe very wide, sometimes 2–3-toothed. Corolla very minute, with a 5-lobed limb. Stamens 2 or 4; anther-cells parallel, confluent at tip. Style spathulate-dilated, shortly 2-lamellate. Capsule globose, loculicidal.—*DC. Prod.* x. p. 428.

A minute tropical water or mud plant, with tufted, linear-spathulate leaves, and axillary or tufted, 1-flowered pedicels. Calyx scarcely 1 line long.—A specimen from the Cape is preserved in Herb. Linn. (*vide* Benth.)

29. **LIMOSELLA**, Linn.

Calyx bell-shaped, 5-toothed. Corolla with a short tube and rotate-campanulate, 5-lobed limb. Stamens 4; anther-cells completely 1-celled by confluence. Style short, clavate-thickened. Capsule 2-valved, the valves entire, parallel to a

very thin, incomplete, placentiferous septum.—*DC. Prod.* x. p. 426.

Small, cosmopolitan, water and mud plants, glabrous, tufted or creeping by stolons. Leaves and peduncles tufted at the nodes; petiole long and slender; lamina quite entire, ovate oblong or linear. Flowers purple or blue.—2 South African species.

### 30. CAMPTOLOMA, Benth.

Calyx 5-parted, subequal. Corolla-tube exserted, dilated upwards, the limb 5-lobed, sub-2-labiate. Stamens 4, included, subdidynamous; anthers reniform, 1-celled by confluence. Style scarcely dilated at the summit, obtuse. Capsule narrow-ovate, septicidal, the valves 2-fid, with inflexed margins, exposing the placentiferous column.—*DC. Prod.* x. p. 430.

A villous, erect, branching herb, found at Elephant's Bay. Leaves alternate, petioled, orbicular, crenate, 6–8 lines wide. Peduncles axillary, 3–5-flowered; bracts minute.

### 31. SCOPARIA, Linn.

Calyx 4–5-parted. Corolla rotate, 4-fid, densely hairy in the throat. Stamens 4; anthers subsagittate, with distinct cells. Style slightly clavate, truncate or emarginate. Capsule septicidal, the valves entire, membranous, with inflexed margins, exposing the placentiferous column.—*DC. Prod.* x. p. 431.

*S. dulcis*, a common tropical weed, is widely diffused in all warm latitudes.

## TRIBE 7. VERONICEÆ. (Gen. 32.)

### 32. VERONICA, Linn.

Calyx 4–5-parted. Corolla-tube short; limb 4- rarely 5-fid, spreading, the lateral or the lowest segment narrower. Stamens 2, in the tube, exserted, one at each side of the upper segment; anthers with divergent or parallel cells, confluent at the apex. Stigma subcapitate. Capsule compressed or turgid, 2-furrowed, more or less loculicidal.—*DC. Prod.* x. p. 458.

A vast, cosmopolitan genus.—*V. Anagallis*, a common European and North Asiatic species, is found in many parts of the Cape. It is an erect, aquatic herb, with sessile, cordate-amplexicaul leaves, and axillary racemes of small white or pinkish flowers.

## TRIBE 8. BUCHNEREÆ. (Gen. 33–37.)

### 33. BUCHNERA, Linn.

Calyx tubular, faintly nerved, shortly 5-toothed. Corolla



salver-shaped, with a slender, straight or slightly-curved tube ; limb spreading, subequally 5-lobed. Stamens 4, included ; anthers 1-celled. Capsules straight, with coriaceous valves, opening when ripe elastically.—*DC. Prod. x. p. 495.*

Mostly scabrous, rigid herbs, drying black. Lower leaves opposite, upper alternate ; floral bract-form. Flowers in terminal, dense or interrupted bracteate spikes.—2 Cape species, dispersed.

### 34. **STRIGA**, Lour.

Calyx tubular, ribbed, 5-toothed or 5-fid. Corolla-tube slender, incurved above ; the limb 2-labiate, upper lip entire or emarginate or 2-fid, lower 3-fid. Stamens and capsules of *Buchnera*.—*DC. Prod. x. p. 500.*

Scabrous herbs, drying black ; sometimes root-parasites. Lower leaves opposite, upper alternate, commonly linear and entire, rarely toothed. Flowers in terminal spikes, purple or scarlet.—4 Cape species, dispersed.

### 35. **CYCNium**, E. Mey.

Calyx 2-bracteolate at base, with a long tube, 5-toothed. Corolla-tube straight or slightly curved ; limb ample, spreading, the upper lip very wide, emarginate or 2-fid, lower deeply 3-fid, the lobes ovate, entire or undulate. Stamens included, didynamous ; anthers 1-celled, obtuse. Capsules somewhat fleshy, straight, acute.—*DC. Prod. x. p. 504 ; Thes. Cap. t. 49, 50.*

Rigid, scabrous herbs, drying black. Leaves opposite or the upper alternate, toothed or reduced to scales. Flowers large and handsome, axillary or racemose.—5 or 6 species, Eastern and at Natal.

### 36. **RHAMPHICARPA**, Benth.

Calyx bell-shaped, 5-fid. Corolla-tube slender, much exserted, straight or curved ; limb of 5 broadly obovate, subequal lobes, or the 2 uppermost connate in a greater or less degree. Stamens 4, didynamous, included ; anthers obtuse. Capsules ovate, laterally compressed, obliquely mucronate or rostrate, with coriaceous valves.—*DC. Prod. x. p. 504 ; Thes. Cap. t. 57.*

Erect herbs, drying black. Leaves opposite, the upper alternate, narrow, entire or pinnatisect. Flowers racemose, pedunculate ; corolla in the only Cape species (*R. tubulosa*) purple or pink.—Eastern district and Natal.

### 37. **HYOBANCHE**, Thunb.

Calyx-lobes 5, linear-spathulate, 2 anterior cleft nearly to the base, 3 back ones connate nearly to the middle. Corolla tubular-clubshaped, incurved, galeate at apex, obliquely and

shortly open in front; the limb obsolete, of very small, tooth-like lobes. Stamens 4, didynamous, under the galea; filaments glabrous; anthers 1-celled, muticous. Ovary ovate, 2-celled, with 2 axile placentas in each cell; style clavate and incurved at the apex. Capsules subglobose, fleshy, at length deliquescent.—*DC. Prod.* x. p. 505.

A rosy-red, thick-stemmed root-parasite, a great part of the stem underground, imbricated with leaf-scales. Spikes dense, ovate. It varies either glabrous or densely woolly.—Found throughout the colony.

### TRIBE 9. GERARDIÆ. (Gen. 38–41.)

#### 38. GRADERIA, Benth.

Calyx tubular-bellshaped, 5-fid. Corolla-tube exserted, widened upwards; the limb 5-fid, lobes spreading, entire. Stamens didynamous, included; anthers free, with divergent, arched-oblong, mucronulate cells, 1 of each anther narrower, empty. Style thickened and tongue-shaped at apex, incurved. Capsule ovate, very obliquely acuminate, compressed, the cells unequal, dehiscing at back from top to bottom.—*DC. Prod.* x. p. 521.

*G. scabra*, Bth., the only species, is common in the Eastern districts and at Natal. Stem herbaceous, rigid, under 1 foot high, scabrous or glabrous. Leaves opposite or the upper alternate, ovate or lanceolate, entire or cut, very variable. Flowers in terminal, leafy spikes. Corolla 1 in. long.

#### 39. SOPUBIA, Hamilt.

Calyx bell-shaped, 5-toothed, teeth short or narrow, valvate in the bud. Corolla funnel- or subrotate-bellshaped, the lobes of the limb spreading, entire. Stamens didynamous; anthers 2 or all cohering in pairs, 1 cell of each anther ovate, submuticous, fertile, the other small, stipitate, empty. Style thickened and tongue-shaped at apex, obtuse. Capsule ovate or oblong, rounded or compressed at the apex, retuse or emarginate; valves entire or 2-fid.—*DC. Prod.* x. p. 521; *Thes. Cap. t.* 146.

Annual, slender-branching herbs, Asiatic and African. Leaves narrow, entire or pinnatifid. Flowers racemose.—2 Cape species, Eastern district and Natal.

#### 40. AULAYA, Harv.

Calyx tubular or ovate, 5-fid. Corolla-tube exserted; limb erect or spreading, the lobes entire or crenulate. Stamens as in *Harveya*. Style thickened and tongue-shaped at apex, incurved. Capsules with entire valves.—*DC. Prod.* x. p. 521; *Thes. Cap. t.* 36.

Root parasites, with fleshy stems, drying black, glabrous or hairy. Leaves, in the South African species, scale-like. Flowers sessile or pedicelled, in terminal leafy spikes or racemes. In the majority the stem, leaf-scales, calyx and corolla are brilliantly orange or scarlet; in others purple, less bright.—7 or 8 species, dispersed.

#### 41. HARVEYA, Hook.

Calyx inflated-bellshaped, leafy, 5-angled, semi-5-fid. Corolla with a long, curved tube, slightly constricted in the middle, inflated above; limb somewhat ringent, 5-lobed; the lobes wavy, lateral reflexed. Stamens didynamous, included; 1 cell of each anther fertile, ovate, acuminate, the other longer, subulate, empty. Style abruptly capitate at the apex. Capsule with entire valves.—*DC. Prod. x. p. 524; Hook. Ic. Pl. t. 118.*

*H. Capensis*, Hook., is a root-parasite, drying black. Stems hairy; leaf-scales ovate, opposite or the upper alternate. Flowers large and handsome, white or rosy, in terminal racemes.

#### TRIBE 10. EUPHRASIEÆ.

#### 42. TRIXAGO, Stev.

Calyx inflated-bellshaped, shortly 4-lobed. Corolla ringent, the galea concave, its margins not reflexed, the lower lip equalling or exceeding the galea, 3-lobed; lobes spreading; palate 2-gibbous. Stamens didynamous, under the galea; anther-cells mucronate. Style thickened and obtuse at apex. Capsules ovate-globose, turgid, with thick, 2-fid placentas.—*DC. Prod. x. p. 543.*

*T. Apula*, Stev. (*Bartsia Capensis*, Spr.), a very widely-dispersed annual, is also frequent at the Cape. Stem 3 in. to 1–2 ft. high, simple or branched, hispid or villous, more or less viscid. Leaves lanceolate or linear, opposite, dentate. Flowers yellow, in terminal leafy spikes.

### ORDER LXXXVIII. LENTIBULARINEÆ.

Calyx divided, persistent. Corolla 2-labiate, spurred or saccate at base. Stamens 2, in the base of the corolla; anthers 1-celled by confluence. Ovary free, 1-celled; ovules many, on a free central, globose placenta; style short; stigma 2-lamellate. Fruit capsular, 1-celled, opening transversely or by a longitudinal cleft. Seeds minute, without albumen.—Small, herbaceous, marsh or water plants, with crowded radical leaves, which are often abortive, and yellow or purple flowers on slender scapes.

Calyx 2-parted . . . . . 1. UTRICULARIA.  
Calyx 5-parted . . . . . 2. GENLISEA.

#### 1. UTRICULARIA, Linn.

Calyx 2-parted, the upper lobe entire, the lower emarginate

or 2-dentate. Corolla personate, spurred under the lower lip; upper lip erect, subentire; lower longer, 3-lobed, with a prominent palate. Style 0 or filiform. Capsules many-seeded.—*DC. Prod.* viii. *p.* 3.

Small aquatic or marsh herbs, often floating by means of small bladders, in which case the submerged leaves are multifid; most of the Cape species are terrestrial, growing in damp spots, and these have narrow, linear, tufted radical leaves, often without bladders. Scapes naked. Flowers racemose, blue purple or yellow.—4 or 5 Cape species, dispersed.

## 2. GENLISEA, St. Hil.

Calyx 5-parted, subequal, spreading. Corolla personate, the upper lip entire, lower 3-lobed, spurred at base. Style scarcely any.—*DC. Prod.* viii. *p.* 25.

Marsh plants, resembling the terrestrial *Utriculariæ*, with radical, tufted, entire leaves. Scapes racemose; flowers yellow or violet; pedicels 3-bracted at base.—1 Cape species, Eastern.

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## ORDER LXXXIX. OROBANCHEÆ.

Calyx divided, persistent. Corolla irregular, mostly 2-labiate, persistent, imbricate in bud. Stamens 4, didynamous; anthers 2-celled. Ovary on a fleshy, unilateral disk (sometimes reduced to a gland), 1-celled, with 2 opposite pairs of parietal placentas; ovules many; style simple; stigma 2-lobed. Capsule 1-celled, enclosed within the withered corolla. Seeds minute, with much albumen.—Leafless or scaly parasites on the roots of other plants.

### 1. PHELIPÆA, Tourn.

Flowers bisexual, 2-bracteolate. Calyx tubular, 4-5-fid or toothed. Corolla ringent, the upper lip erect, 2-fid, lower spreading, 3-fid. Ovary with 4 geminate, parietal placentas; hypogynous gland obsolete; stigma capitate-2-lobed. Capsules 2-valved at the apex, the valves cohering below. Seeds very minute and numerous.—*DC. Prod.* xi. *p.* 8.

*P. ramosa*, C. A. Mey. (*Orobanche ramosa*, Linn.), grows in the Cape flats, near the Salt river. It has a tuberous-based branching stem, the branches ending in spikes of pale purple, downy flowers. It is also a native of Europe, Siberia, and Abyssinia.

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## ORDER XC. BIGNONIACEÆ.

Calyx 5-6-lobed or truncate, sometimes splitting down one side or 2-labiate. Corolla 5-6-lobed, hypogynous, deciduous, more or less unequal or 2-lipped, imbricate in bud. Stamens on the tube, 4 perfect, didynamous, with or without the rudi-

ment of a fifth, rarely 5-6, all fertile; anthers 2-celled. A tumid disk round the ovary. Ovary 2-celled (rarely 1-celled), few- or many-ovuled; style simple; stigma 2-lamellate. Capsules 2-valved, 2-celled or falsely 4-celled, depressed or compressed, the septum either parallel or at right angles to the valves, or a fleshy or woody, indehiscent fruit. Seeds winged in the capsular genera, wingless in the others; in all cases exalbuminous.—Trees and shrubs, very rarely herbs, erect or climbing. Leaves opposite or rarely alternate, mostly compound. Flowers showy.

Tribe 1. BIGNONIEÆ. Fruit a 2-valved, 2-celled capsule. Seeds with membranous wings. Cotyledons leafy.

Flowers racemose; corolla 2-lipped; stamens 4, didynamous . . . . . 1. TECOMA.

Flowers solitary; corolla funnel- or salver-shaped; stamens 5-6-7, subequal.

Calyx cleft on one side; corolla-tube cylindrical. . . 2. CATOPHRACTES.

Calyx 4-5-toothed; corolla-tube widely bell-shaped 3. RHIGOZUM.

Tribe 2. CRESCENTIEÆ. Fruit fleshy or woody, indehiscent. Seeds wingless. Cotyledons fleshy.

Leaves pinnate; flowers panicled; corolla sharply 5-

lobed; stamens 4, didynamous . . . . . 4. KIGELIA.

### TRIBE 1. BIGNONIEÆ. (Gen. 1-3.)

#### 1. TECOMA, Juss.

Calyx bell-shaped, 5-toothed. Corolla-tube short, dilated in the throat, 5-lobed, sub-2-labiate or equal. Stamens 4, didynamous, with rudiment of a fifth; anthers with divergent cells. Capsules 2-celled, 2-valved, the septum at right angles to the valves. Seeds winged.—*DC. Prod.* ix. p. 217.

*T. Capensis*, Lindl., a handsome bush, with ash-like leaves and racemes of scarlet flowers, is cultivated throughout the colony, and found wild, in great profusion, in many parts of the Eastern Province, in Caffraria, and at Natal. Its *African* origin has been questioned by Dr. Seemann, but I think his opinion supported on very slender evidence, and chiefly defensible on abstract theoretical grounds. But why may not there be an African species of *Tecoma*,—a genus by no means exclusively American,—as well as an African *Menodora*, or as a Mexican *Hermannia*?

#### 2. CATOPHRACTES, Don.

Calyx cleft on one side, on the other 6-toothed. Corolla with a cylindrical tube, funnel-shaped in the throat; limb 6-lobed, spreading, equal. Stamens 6, rarely 7, subequal, exserted; anther-cells parallel, free below. Ovary short, conical, 2-celled. Fruit unknown.—*DC. Prod.* ix. p. 233; *Don in Linn. Trans.* xviii. p. 306. t. 22.

Rigid, erect, spiny shrubs, clothed with friable, powdery pubescence.



Branches divaricate. Leaves simple, tufted. Flowers lateral, subsessile, handsome, white. Two species: *C. Alexandri*, Don, found by Sir J. Alexander in Namaqualand, and by Mr. Chapman near Lake Ngami; and *C. Kolbeana*, Harv., discovered by Mrs. Kolbe in Damaraland.

### 3. RHIGOZUM, Burch.

Calyx bell-shaped, shortly 4-5-toothed. Corolla funnel-shaped, with a wide, subcampanulate tube, and an obtusely 5-lobed, spreading, subequal limb. Stamens 5 (rarely 6-7), subequal and perfect, alternating with the corolla-lobes; anther-cells parallel, erect, free below. Ovary fusiform, 2-celled; ovules many. Capsules compressed, substipitate, 2-celled, the septum parallel with the valves. Seeds widely winged.—*DC. Prod.* ix. p. 234.

Rigid, di-trichotomous, spiny shrubs, natives of the Eastern and Northern districts. Leaves on the twigs alternate or ternate, small; at the nodes fascicled, obovate or oblong, glabrous or downy. Flowers mostly solitary at the nodes, subsessile, yellow.—2 or 3 species?

## TRIBE 2. CRESCENTIEÆ. (Gen. 4.)

### 4. KIGELIA, DC.

Calyx tubular-subcampanulate, 5-fid, with subacute lobes. Corolla with a short tube, a widely-bellshaped throat, and a subequally 5-lobed limb; the lobes ovate, acuminate. Stamens 4, didynamous, with a rudiment; anthers 2-celled, the cells separate at base. Ovary on a tumid disk, with prominent placentas, 2-celled; stigma 2-lamellate. Fruit pulpy within, many-seeded.—*DC. Prod.* ix. p. 247.

*K. pinnata*, DC., a tree, sent from Natal by Mr. Sanderson, is also a native of Mozambique. Leaves alternate, pinnate, coriaceous; leaflets oval. Panicles on long peduncles, pendulous, springing from the trunk or from old branches. Corolla large and handsome, red, paler outside.

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## ORDER XCI. GESNERIACEÆ.

Calyx with 5 teeth, lobes, or distinct sepals. Corolla-tube long or short; limb 2-lipped or of 5 spreading lobes, imbricate in bud. Stamens 2, or 4 in pairs, inserted on the tube, with sometimes a fifth sterile one; anther-cells distinct or confluent. Ovary superior or inferior, 1-celled, with 2 entire or lobed parietal placentas that almost meet in the cavity; style simple; stigma entire or lobed; ovules few or many. Fruit a berry or capsule, 1- or many-seeded.—Herbs or shrubs, rarely climbers. Leaves opposite or alternate, rarely whorled. A considerable tropical Order.

Tribe 1. PEDALINEÆ. Fruit indehiscent or obscurely dehiscent at the apex, hard, or fleshy. Seeds solitary or few, scarcely oily, never winged. Procumbent annuals or perennials.

- Corolla widely-ringent, with a large lower lobe; capsule 2-horned . . . . . 1. *PRETREA*.  
 Corolla tubular-funnelshaped, subequally 5-lobed.  
 Fruit beaked, shortly spiny at base . . . . . 2. *ROGERIA*.  
 Fruit angularly wing-lobed, the lobes rigid, spiny, and armed with recurve-hooked spines . . . . . 3. *UNCARIA*.  
 Fruit subcircular, broadly 2-winged round the margin; seeds solitary . . . . . 4. *PTERODISCUS*.

Tribe 2. *SESAMEÆ*. Fruit capsular, membranous, dehiscent. Seeds numerous, oily, often winged.—Erect, leafy annuals.

- Capsule oblong, 2-4-lobed, acuminate . . . . . 5. *SESAMOPTERIS*.  
 Capsule oblong 4-lobed, shortly 4-horned at apex . . . . . 6. *SPORLEDERA*.

Tribe 3. *DIDYMOCARPEÆ*. Ovary 1-celled, with projecting parietal placentas. Capsule 2-celled, dehiscent, membranous. Seeds numerous, minute, mostly nude, pendulous.—Stemless perennials.

- Capsule pod-like, long and slender, spirally twisted . . . . . 7. *STREPTOCARPUS*.

## TRIBE 1. PEDALINEÆ. (Gen. 1-4.)

### 1. *PRETREA*, Gay.

Calyx 5-parted, the lobes linear, subfalcate. Corolla campanulate-ringent, very gibbous at base, the limb broad, 5-lobed, the lowest lobe ovate, much the longest, 7-striate. Stamens 4, didynamous; anthers oblong, incumbent. Ovary globose, 2-horned, pubescent; stigma forked. Fruit hard, 2-horned, 4-lobed; nuclei 1-celled, 1-2-seeded. Embryo minute.—*Decaisne in Ann. Sc. Nat. ser. 5, iii. 333*.

*P. eriocarpa*, Dene., found by the Rev. P. Lemuc near Litakun, is thus described:—"Branches pubescent-hairy; leaves obtusely lobulate or coarsely toothed, petioled; peduncles twice as long as leaves; 2-glanded at base; bracts setaceous; calyx-lobes lanceolate; corolla broadly ringent, downy; fruits cupulate, nerved, horned, pubescent-hairy." (*Dcne.*)—Unknown to me.

### 2. *ROGERIA*, Gay.

Calyx 5-fid, persistent. Corolla tubular, somewhat funnel-shaped, gibbous on the upper side at base, with a short, 5-lobed, sub-2-labiate limb. Stamens 4, included, didynamous, inserted in the base of corolla-tube; a minute rudiment of a 5th; anthers oval, 2-celled. Style filiform; stigma 2-3-lamellate. Fruit hard, opening at the apex, beaked, having near the base 2-5 unequal spines, 2-3-valved, with 4-6 unequal cells, the larger several-seeded, the smaller abortive or 1-seeded. Seeds pendulous, 3-angled, with a muricated testa.—*DC. Prod. ix. p. 256; Thes. Cap. t. 118*.

*R. longiflora*, Gay, is a strong-growing, procumbent, glabrous and glaucous annual, growing to the north of the Orange River. Leaves on long petioles, opposite, broadly-ovate, 2-2½ inches long. Tube of corolla nearly 3 inches long, the lobes obtuse.

3. **UNCARIA**, Burchell.

Calyx 5-parted, persistent; lobes linear, 1 shorter. Corolla tubulose-funnel shaped, equal at base, with a subequal, 5-lobed limb, the lobes obtuse. Stamens 4, included, didynamous, in the base of corolla-tube, with a rudiment of a fifth; anthers ovoid. Ovary 2-celled; ovules several in each cell, crowded, 2-seriate; stigma 2-lamellate. Fruit ligneous, at length imperfectly opening, 2-celled, angularly lobed, the lobes simple, branched, or sometimes ending in a hooked, very rigid spine. Seeds numerous, oblong, angular, rough.—*Harpagophytum*, DC. *Prod.* ix. p. 257.

Prostrate, branching herbs, covered with minute white dots. Leaves opposite, petioled, 5-nerved, palmatifid, the lobes sinuate-cut. Pedicels axillary, 1-flowered, short. Corolla purple, with a pale tube. The famous "Grapple-plant" of Burchell, found in and beyond the Northern frontier, is *U. procumbens*.—3 species, all Northern.

4. **PTERODISCUS**, Hook.

Calyx small, 5-parted. Corolla funnel-shaped, with a spreading, 5-lobed, subequal limb. Stamens 4, didynamous, included, with a rudimentary fifth; filaments with thickened, woolly bases; anthers 2-celled, cells triangular, opening by oblong pores. Ovary ovate, oblique, with a dorsal gland at base; style included; stigma 2-labiate, the lobes subulate. Fruit leathery, indehiscient, roundish-compressed, broadly 2-winged round the margin, the disk subtuberculate, 2-celled (or spuriously 6-celled, 2 cells fertile). Seed solitary, pendulous, oblong, terete-compressed, produced at the apex into a subulate point, with a pit-like depression.—*Hook. Bot. Mag.* t. 4117.

A tuberous-rooted herb, with opposite, oblong, sinuate-toothed leaves, on short petioles 2-glandular at base, and axillary, solitary, very showy purple flowers.—Found by Burke and Zeyher at Macalisberg.

## TRIBE 2. SESAMEÆ. (Gen. 5-6.)

5. **SESAMOPTERIS**, DC.

Calyx 5-parted, at length deciduous. Corolla-tube widening upwards; limb plaited, sub-2-labiate, upper lip emarginate, lower semi-3-fid, the medial lobe long. Stamens 4, didynamous, with a fifth rudiment; anthers oval-oblong. Stigma 2-lamelled. Capsules oblong, bluntly 4-angled or 2-lobed, furrowed, acuminate with the base of style, 2-valved, 2-celled (the valves incurved, as if 4-celled). Seeds compressed, with a membranous wing and flat cotyledons.—DC. *Prod.* ix. p. 251.

*S. pentaphylla*, DC., is an erect annual, with long petioled, 5-foliolate

leaves, the leaflets narrow, glaucous. Capsules 2-lobed, pubescent.—Found in the Northern and Eastern districts.

### 6. SPORLEDERA, Bernh.

Calyx 5-parted, at length deciduous. Corolla with a short tube, a bell-shaped throat, and a 5-lobed, 2-labiate limb, the medial lobe of lower lip largest. Stamens 4, didynamous. Ovary acute, terete, by the inflexed margins of the valves 4-celled; stigma 2-lamelled. Capsules oblong, cylindrical-4-lobed, shortly 4-horned at the apex, on the angles. Seeds flattish, obovate, rugulose on each side, with a deep marginal furrow.—*DC. Prod.* ix. p. 252.

*S. triloba*, Bernh., is an erect annual, with opposite, petioled, coarsely toothed or lobed leaves, and terminal racemes of flowers.—Found at Natal. *S. Kraussiana*, Bernh., appears to be a trifling variety.

### TRIBE 3. DIDYMOCARPEÆ.

### 7. STREPTOCARPUS, Lindl.

Calyx 5-parted, persistent. Corolla tubular funnel-shaped, widening and either ventricose or compressed at the throat, with an obliquely 5-lobed, subequal limb. Stamens 5, the 2 anterior fertile, with glabrous, connate, 2-celled anthers, the cells divergent; 3 upper sterile, adnate to the tube, tubercular at tip. Ovary terete, elongate, straight, 1-celled (almost 4-celled from the inflexed didymous placentas); stigma 2-labiate, the lobes reniform, the lower scarcely larger. Capsule pod-like, terete, spirally twisted, loculicidal. Seeds minute, oblong.—*DC. Prod.* ix. p. 270.

The Cape species, of which several are known, are stemless plants, with rugose, unequal, pubescent or velvety leaves, and 1-2- or many-flowered scapes. Flowers pale purplish-blue, often very handsome.—Eastern districts and Natal.

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## ORDER XCII. ACANTHACEÆ.

Calyx 4-5-parted, equal or unequal, persistent; rarely either multifid or entire and obsolete. Corolla mostly irregular, more or less 2-labiate, rarely 1-labiate or nearly regular. Stamens 4, didynamous, or 2 fertile and 2-3 sterile; anthers 2- or 1-celled. Ovary on a glandular disk, 2-celled; ovules 2 or more in each cell; style filiform; stigma 2-lobed. Capsules 2-celled, elastically 2-valved, loculicidal; seeds 2 or more in each cell, ascending, subtended by rigid, subulate or cup-like, persistent processes of the placentas; albumen 0.—Herbs or shrubs, with opposite, exstipulate leaves and bracteate flowers. Inflorescence various. The Order is chiefly tropical. (I here

have adopted the arrangement of Dr. T. Anderson, given in Proceedings of Linn. Soc., vol. vii., Bot., p. 13.)

Suborder 1. **Thunbergideæ**. Calyx reduced to a fleshy, entire or several-toothed ring. Lobes of corolla twisted in æstivation. Seeds subtended by a cup-like process.—Climbing or prostrate, rarely erect plants.

Calyx inconspicuous, hidden under 2 large, leafy

bracts . . . . . 1. THUNBERGIA.

Suborder 2. **Ruellideæ**. Calyx herbaceous, 5- rarely 4-parted. Corolla with twisted æstivation. Seeds subtended by a rigid hooked process, or by a small nipple.—Not climbers.

Bracts minute or 0 ; capsules subterete.

Corolla straight ; anthers 2-spurred at base ; capsules linear, acute, 4-seeded at apex . . . . . 2. CALOPHANES.

Corolla straight or curved ; anthers not spurred ; capsules tumid above, subglobose, many-seeded. 3. RUELLIA.

Bracts 2, large, covering the unopened corolla ; capsules obovate, shortly constricted at base, dorsally compressed.

Bracts membranous, veiny ; calyx 5-parted ; flowers solitary . . . . . 4. PETALIDIUM.

Bracts subherbaceous ; calyx 4-parted ; flowers in lateral cymules . . . . . 5. PSEUDOBARLERIA.

Bract solitary, large ; 2 short bracteoles ; calyx unequally 5-parted ; flowers in dense spikes . . . 6. PHAYLOPSIS.

Suborder 3. **Acanthideæ**. Calyx herbaceous, 5- rarely 4-parted. Corolla with imbricate or imbricate-2-labiate æstivation. Seeds subtended by a rigid, hooked process.

1. **BARLERIÆ**. Corolla salver-, funnel-, or bell-shaped, subequally 5-lobed ; lobes with imbricate æstivation.

Calyx 4-parted ; corolla funnel- or salver-shaped ; stamens 2-4 . . . . . 7. BARLERIA.

Calyx 5-parted ; corolla bell-shaped ; stamens 4 ; ovules 4-8 . . . . . 8. CRABBEA.

2. **ACANTHÆ**. Corolla 1-labiate, 3-5-lobed ; stamens 4 ; anthers 1-celled.

Calyx cruciately 4-parted.

Tube of corolla very short.

Upper calyx-lobe entire, 3-nerved, lower 2-nerved ; capsules with membranous-valves. 9. BLEPHARIS.

Upper calyx-lobe 4- or many-nerved ; capsule papery . . . . . 11. ACANTHUS.

Tube of corolla long ; upper calyx-lobe obsoletely 6-nerved, lower 6-nerved . . . . . 10. ACANTHOPSIS.

Calyx 5-parted, scarious, veinless ; corolla 5-lobed . . . . . 12. SCLEROCHITON.

3. **JUSTICIÆ**. Corolla 2-lipped ; fertile stamens 2 ; anther-cells more or less superposed.

Corolla-tube short, straight ; lower lip 3-fid, the medial lobe larger than the lateral ; upper lip shortly 2-dentate ; stamens 2.



- Upper lip of corolla concave, compressed, helmet-shaped; lower flat; stamens exserted; anthers 2-celled, obtuse . . . . 13. DUVERNOIA.
- Upper lip of corolla concave, not helmet-shaped; lower convex, rugose; anthers 2-celled, the lower cell spurred . . . . 14. JUSTICIA.
- Upper lip of corolla narrow, 2-dentate; lower convex, reticulate; anthers 2-celled, cells obtuse, subtransversely inserted one above the other obliquely . . . . . 15. ECTEINANTHUS.
- Corolla-tube long, straight or resupinate; lower lip with the medial lobe very large, the lateral linear; bracts (except in *Rhinacanthus*) much larger than the calyx.
- Tube of corolla resupinate.
- Capsules short, the septum in the ripe fruit breaking off from the valves . . . . 16. DICLIPTERA.
- Capsules long, the septum persistent . . . 17. PERISTROPHE.
- Tube of corolla straight.
- Anthers 2-celled.
- Calyx-lobes cohering; bracts large, 4-leaved; flowers in heads . . . . . 18. HYPOESTES.
- Calyx 5-parted; corolla with a very long tube; bracts small, subulate; flowers panicked . . . . . 20. RHINACANTHUS.
- Anthers 1-celled, stamens included; flowers not spiked . . . . . 19. RAMUSIA.
- Corolla-tube short, dilated; lower lip subequally 3-lobed; stamens 2 or 4; bracts small or 0.
- Anthers 1-celled, blunt; flowers spiked . . . 21. RUTTYA.
4. ASYSTASIEÆ. Corolla funnel- or salver-shaped, with 2-labiate æstivation. Stamens 4, 2 often sterile.
- Stamens 4, all fertile; anther-cells mucronate at base . . . . . 22. ASYSTASIA.
- Stamens 4, 2 sterile; anther-cells obtuse . . . 23. MACKAYA.

### SUBORDER 1. **Thunbergideæ.** (Gen. 1.)

#### 1. **THUNBERGIA**, Linn. f.

Calyx minute, cup-like, truncate or many-toothed, concealed under 2 large, leafy, valvate bracts. Corolla between bell- and funnel-shaped, inflated in the throat, the limb subequally 5-lobed, spreading. Stamens 4, didynamous; anthers erect, adnate, the cells parallel, mucronate at base. Stigma funnel-shaped, sub-2-labiate. Disk thick, circling the ovary. Capsule swollen at base, 2-celled, 2-4-seeded, tapering into a beak. Seeds subtended by a cup-like ring.—*DC. Prod.* xi. p. 54.

Climbing or prostrate shrubs or herbs, Asiatic and African. Leaves mostly angular, often hairy. Flowers axillary, peduncled, solitary or racemose, handsome, yellow blue or white, the throat often darker.—5 South African species, natives of the Eastern districts and Natal.

SUBORDER 2. **Ruellideæ.** (Gen. 2-6.)2. **CALOPHANES**, Don.

Calyx very deeply 5-cleft, the segments setaceous. Corolla funnel-shaped; limb 5-fid, subregular. Stamens 4, didynamous, or 2; anthers 2-spurred at base or pointless, cells parallel, flat, membranous. Capsule lanceolate, 4-seeded in the middle. *DC. Prod.* xi. p. 107. Also *Chætacanthus*, *DC. l. c.* 462; *Linostylis*, *Sond. in Linn.* xxiii. p. 94.

Herbs or rigid halfshrubs. Leaves small. Flowers opposite, axillary, sessile, with 2 subulate bracts at base.—5 South African species, natives of Eastern district and Natal.

3. **RUELLIA**, Linn.

Calyx 5-parted, the segments equal or unequal, linear. Corolla funnel-shaped, the tube subcampanulate upwards; limb bluntly 5-lobed, subequal. Stamens 4, didynamous, not longer than the corolla; anthers oblong, 2-celled, cells parallel, equal, pointless or mucronate at base. Stigma subulate, with a tooth at base, or 2-lamellate. Capsule tumid above, 6-8-16-seeded.—*DC. Prod.* xi. p. 143. Also *Fabria*, *E. M.*; *DC. l. c.* p. 113.

Herbs or undershrubs, pubescent or hairy. Flowers axillary, solitary, spiked or capitate, with small bracts.—4 South African species, Eastern.

4. **PETALIDIUM**, N. ab E.

Calyx equal, deeply 5-parted, enclosed in 2 large, veiny, valvate, boat-shaped bracts. Corolla funnel-shaped, the limb subequally 5-fid. Stamens 4, didynamous, included; anthers oblong, the cells parallel, mucronate at base. Stigma 2-fid, the lobes linear. Capsule shortly compressed at base, 4-seeded in the middle; septum persistent.—*Thes. Cap. t.* 143.

*P. linifolium*, T. Andr., the only South African species, is a rigid, glabrous, branching shrub, with narrow linear, acute leaves, and axillary, pedunculate flowers, each sitting in a pair of boat-shaped, papery membranous bracts, netted over with slender, green veins.—Found in Damaraland by Mrs. Kolbe.

5. **PSEUDOBARLERIA**, T. Anders.

Bracts 2, opposite, large, covering the calyx and corolla in bud, and the capsule. Calyx 4-parted, the upper and lower segments larger, lateral smaller, subulate. Corolla funnel-shaped; tube constricted, longer than the equally 5-lobed limb; lobes short, with twisted æstivation. Stamens 4, included; filaments equal, inserted in the throat, connate in pairs at base; anthers 2-celled, sagittate, cells mucronate at base. Stigma subulate, shortly 2-lobed at base, slightly revo-

lute. Capsule ovate, acute, dorsally-compressed, 4-2-seeded. Seeds tomentose, with a hyaline margin, mucilaginous when moistened.—*T. Anders. in Linn. Soc. Journ.* vii. *Bot.* p. 26.

*P. hirsuta*, T. A., is a halfshrub, clothed with spreading hairs. Leaves petioled, broadly ovate; flowers in lateral cymes.—West Coast, beyond the frontier, *Curror in Herb. Hook.*

## 6. PHAYLOPSIS, Willd.

Calyx 5-parted, the upper segment very large, bract-like. Corolla 2-lipped, upper lip 2-fid, lower 3-fid or subringent, the upper lip entire or 2-dentate. Stamens 4, didynamous, included; anthers 2-celled, with parallel cells. Capsule 2-celled, 2-valved, 4-seeded at base, with membranous sides, the septum separating in 2 seed-bearing lamellæ.—*Ætheilema*, *DC. Prod.* xi. p. 261.

Leafy branching, herbaceous plants. Spikes axillary and terminal, leafy, subsessile.—Natal.

## SUBORDER 3. **Acanthideæ.** (Gen. 7-23.)

### 7. BARLERIA, Linn.

Calyx cruciately 4-parted, the upper and lower lobes much larger and broader than the others. Corolla funnel-shaped, the tube long or short, dilated in the throat; limb 5-parted, the upper lobe shorter. Stamens 4, didynamous, inserted near the base of the tube, the longer ones equalling the corolla-tube, the shorter sometimes without anthers; anthers linear, 2-celled, cells parallel, pointless. Stigma funnel-shaped, truncate. Capsules conical-acuminate, 4-2-seeded at base; septum entire, adnate.—*DC. Prod.* xi. p. 223.

Herbaceous or shrubby, of various habit. Flowers axillary or spiked, with wide or narrow bracts, handsome, mostly blue.—13 South African species, Northern and Eastern.

### 8. CRABBEA, Harv.

Calyx 5-parted, subequal, the segments subulate. Corolla tubular or bell-shaped; limb 5-parted, the 3 upper segments rather smaller. Stamens 4, included; anthers 2-celled, cells contiguous, unequal at base, bristly. Stigma funnel-shaped, 2-lipped, 1 lip short, narrow, the other dilated, ovate. Capsule terete, 6-8-seeded.—*DC. Prod.* xi. p. 162; *Thes. Cap.* t. 64.

Dwarf undershrubs, often procumbent, with densely crowded leaves. Spikes axillary, subsessile, capitate, imbricated with large, rigid, veiny, spine-bordered or rigidly ciliate bracts.—4 or 5 species, in Caffraria and Natal.

## 9. BLEPHARIS, Juss.

Calyx cruciately 4-parted, bracteate; upper segment entire, 3-nerved; lower 2-nerved. Corolla-tube very short, lip 5-lobed, 3 often much larger than the others. Stamens 4, subdidynamous; anthers 1-celled. Capsule 2-celled; 2-4-seeded at the base.—*Blepharis* and *Acanthodium*, *Nees in DC. Prod.* xi. pp. 265, 273.

Dwarf shrubs or herbs, often spiny and woody. Flowers in bracteate spikes.—11 Cape species, all but one from east of Uitenhage.

## 10. ACANTHOPSIS, Harv.

Calyx 4-parted, the upper and lower segments much larger, the former 2-dentate, obsoletely 6-nerved. Corolla 1-labiate, with a long, slender tube, the lip shortly 5-lobed, the middle lobe larger, the lateral ear-like. Stamens 4, on the summit of the corolla-tube, exserted; anthers 1-celled, bearded, fixed by the middle on the apex of the filament. Stigma acute, incurved. Capsule short, ovate, compressed, 2-seeded at base.—*DC. Prod.* xi. p. 278.

Herbs with spinous-toothed leaves, and dense, terminal spikes, with multifid, rigid, spinous bracts.—2 species, from the Northern frontier.

## 11. ACANTHUS, Linn.

Calyx 4-parted, the upper and lower segments broader, 4- or many-nerved. Corolla 1-labiate, lip 3-fid or 3-lobed, often eared at base, the upper margin entire. Stamens 4, didynamous; anthers 1-celled, ciliate. Capsule 2-celled, compressed, papery, 4-seeded.—*DC. Prod.* xi. p. 269. *Also* *Dilivaria*, *DC. l. c.* 268.

Herbs or undershrubs. *A. ilicifolius*, Linn., a widely dispersed maritime Asiatic species, occurs near Uitenhage.

## 12. SCLEROCHITON, Harv.

Calyx 2-bracteate, scarious, rigid, 5-parted; segments subequal, obtuse. Corolla 1-labiate, with an incurved tube, the throat wider and cleft on the upper side; limb flat, 5-lobed. Stamens 4, exserted, subequal; anthers 1-celled, cells semi-ovate, ciliolate. Stigma obtuse or 2-dentate. Capsule coriaceous, 2-celled, 2-seeded.—*DC. Prod.* xi. p. 279; *Thes. Cap. t.* 145.

*S. Harveyanus*, Nees, is a trailing, shrubby plant, growing on the borders of woods in Caffraria, with ovate, subglabrous leaves, and axillary, purple flowers.

## 13. DUVERNOIA, E. Mey.

Calyx short, bell-shaped, 4-fid, the upper segment 2-dentate.

Corolla ringent, coriaceous, the upper lip compressed, vaulted, with the margin incurved, especially at the apex, membranous and emarginate; lower lip 3-fid, the medial lobe larger. Stamens 2, exserted; the rudiments of the others adnate to the corolla, appearing as callous, hairy lines rising from the bases of the fertile filaments toward the galea; anthers 2-celled, the cells parallel, pointless, one a little higher. Ovary ovate, hairy, 4-ovuled; stigma obtuse. Capsule?—*DC. Prod.* xi. p. 322.

A Natal shrub, with oblong, acute glabrous leaves, 7-9 inches long, 2½ inches wide, and axillary, peduncled, bracteate spikes. Corolla purple, velvety, 1 in. long,

#### 14. JUSTICIA, Linn.

Calyx 5-parted. Corolla-tube short, straight, upper lip 3-fid, concave, not hooded, lower 3-fid, middle-lobe larger than the lateral, convex, rugose. Stamens 2, fertile, exserted; anther-cells superposed, lower spurred. Ovary with 2 or more ovules in each cell; style entire, obtuse. Capsule laterally compressed below, the seeds 2-valved. Seeds tubercled or mucronate, with acute hooks.—*Justicia*, *Rostellularia*, *Adhatoda*, *Monechma*, and *Raphidospora*, *Nees in DC. Prod.* xi. p. 368, 384, 411, 426, and 499.

Herbs or shrubs. Flowers axillary or terminal, solitary, paniced or spicate, often handsome.—About 20 species, chiefly Eastern.

#### 15. ECTEINANTHUS, T. Anders.

Calyx 5-parted; segments subequal, ciliate. Corolla 2-lipped, the upper lip 2-dentate, subfornicate, lower convex, 3-fid, cross-ridged. Stamens 2; anther-cells placed one above the other, inserted subtransversely on the apex of the filament, oval, pointless. Stigma acute, entire. Capsule ovate, sterile at base, oblique, 4-seeded. Seeds ovate, compressed, rough-skinned.—*T. Anders. in Linn. Soc. Journ.* vii. *Bot.* p. 45; *Rhytiglossa*, *ex parte*, *Nees in DC. Prod.* xi. p. 335.

Small undershrubs or herbs, differing from *Justicia* by the anthers and capsule. Leaves sparse, ovate or oblong. Flowers spiked, axillary and terminal. Bracts small.—5 species, from Eastern district and Natal.

#### 16. DICLIPTERA, Juss.

Calyx 5-parted, equal, sessile in bracteate capitula, the outer bracts mostly 2, opposite, of larger size. Corolla resupinate, 2-labiate, the lips flat or concave, the upper 3-toothed, lower 2-dentate or entire. Stamens 2; anthers 2-celled, the cells placed one above the other, pointless. Capsules 2-valved, 2-celled, short, 4-seeded; the septum, in the ripe capsules,



separating from the back and walls of the valves, curving upwards with the seeds and seed-hooks.—*DC. Prod.* xi. p. 473.

Herbs or shrubby plants, mostly tropical.—3 South African species, Eastern and from Natal.

#### 17. PERISTROPHE, Nees.

Calyx 5-cleft or parted, equal, sessile in bracteate capitula. Corolla resupinate, 2-labiate, the lips flat, the upper 3-toothed, lower entire or 2-toothed. Stamens 2; anthers narrow, 2-celled, the cells placed obliquely one over the other, pointless. Capsules 2-valved, 2-celled, with a long sterile base, cells 2-seeded at the apex; the septum adnate, persistent.—*DC. Prod.* xi. p. 492.

Herbs, with purple, long-tubed flowers, in axillary or terminal umbellate and 2-bracteate heads.—2 species, in the Eastern districts and Natal.

#### 18. HYPOESTES, R. Br.

Calyx 5-cleft or parted, equal, included in a 4-leaved involucre. Corolla 2-lipped, the lower lip deeply 3-fid. Stamens 2; anthers 1-celled, cohering in the bud; cell lateral on a narrow connective. Stigma 2-fid. Capsule compressed and seedless at base, 2-celled and 4-seeded above; septum adnate, complete. Seeds tubercled.—*DC. Prod.* xi. p. 501.

Herbs or shrubs, Asiatic, Australian, and African, very abundant in Madagascar.—2 species, in the Eastern districts and Natal.

#### 19. RAMUSIA, Nees, not E. Mey.

Calyx 5-parted, equal. Corolla 2-labiate, the tube long, the lips about equal, the upper entire, lower 3-fid. Stamens 2, in the throat, exserted; anthers 1-celled, glabrous, pointless, keeled at back, fixed above the base. Stigma entire. Capsule unknown.—*DC. Prod.* xi. p. 309.

An undershrub, with angularly bent, slender branches, oval, bluntly acuminate leaves, and terminal or axillary, spiked flowers. Bracts small.

#### 20. RHINACANTHUS, Nees.

Calyx 5-parted, equal, subtended by small, subulate bracts and bracteoles. Corolla salver-shaped, 2-lipped, with a long, slender tube, the upper lip narrow, lower equally 3-fid. Stamens 2, exserted; anthers 2-celled, pointless, placed one above the other on the connective. Capsule clavate, with a long, compressed, barren base, 4-2-seeded above; septum adnate, complete.—*DC. Prod.* xi. p. 442.

*R. oblongus*, Nees, our only species, is an undershrub, found on the Chumi mountain by Eckler and Zeyher. Leaves lanceolate-oblong; panicles axillary and terminal, 2-3-chotomous; flowers tufted.

21. **RUTTYA**, Harv.

Calyx 5-parted; segments linear-attenuate, very long. Corolla 2-labiate, the upper lip erect, semi-2-fid, flat, lower deflexed, equally 3-parted; tube wide, shorter than the calyx, on one side inflated. Stamens in the throat, exserted, fertile 2, with 1-celled, oblique anthers, mucronate at base; sterile, tooth-like, very short. Ovary sessile, 2-celled, cells 2-ovuled; style slender, pubescent; stigma 2-fid. Capsule clavate, barren at base, 4-seeded above.—*DC. Prod.* xi. p. 309; *Thes. Cap. t.* 144.

A Natal shrub, 8–10 feet high, with ovate-acuminate leaves, and very dense, terminal, ovate-oblong or cylindrical spikes of bright red flowers. Bracts subulate.

22. **ASYSTASIA**, Blume.

Calyx 5-parted, equal. Corolla funnel-shaped; limb 5-fid, subequal, the upper lip rather concave. Stamens 4, didynamous, included, connate in pairs at base; anthers 2-celled, the cells parallel, callous or appendiculate at base. Stigma capitate, 2-lobed. Capsules compressed and barren at base, 4-seeded above.—*DC. Prod.* xi. p. 163.

*A. Gangetica*, T. Anders., a common African and Asiatic species, occurs at Natal. Branches diffuse, slender; leaves cordate-ovate or roundish, small; racemes axillary and terminal, secund; bracts small.

23. **MACKAYA**, Harv.

Calyx small, nude, equally 5-parted, the lobes subulate. Corolla with a cylindrical tube, bell-shaped, the limb veiny, subequal, erect. Stamens in the throat of the tube; 2 fertile, with sagittate, 2-celled, equal-sided anthers; 2 sterile filiform, without anthers. Style filiform; stigma minute, 2-fid. Ovary 2-celled; cells 2-ovuled in the middle. Capsule clavate, with a compressed, barren base, 4-seeded above.—*Thes. Cap. t.* 13.

*M. bella*, Harv., is a graceful shrub, the leaves petioled, ovate-oblong, repand, minutely dotted above, glabrous; the flowers in terminal, slender, secund racemes. Flowers large and handsome, 2 inches long, pale lilac, pendulous.

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 ORDER XCIII. **VERBENACEÆ**.

Calyx tubular, 5-fid or 5-parted, rarely 2-parted, persistent. Corolla tubular, deciduous, with an irregular, more or less labiate, rarely subregular limb. Stamens 4, didynamous, or nearly equal, sometimes with a rudimentary fifth stamen. Ovary free, 2–4-celled; style 1, terminal; ovules mostly soli-

tary, rarely in pairs. Fruit either dry, separating at maturity into 1-seeded nuts, or drupaceous, with a juicy, fleshy or spongy sarcocarp. Seeds erect or pendulous, with or without albumen.—A large Order of herbs shrubs and trees. Leaves commonly opposite, alternate, in *Selagineæ*, *Stilbineæ*, and a few others exstipulate. Inflorescence racemose capitate or cymose.

Suborder 1. **Verbeneæ**. Corolla with imbricate æstivation. Anthers 2-celled. Seeds erect, exalbuminous, with an inferior radicle.—Leaves opposite or whorled, very rarely alternate.

1. **EUVERBENEÆ**. Inflorescence indefinite, racemose, spiked or capitate or rarely solitary, axillary flowers. Ovules erect. (Calyx tubular.)
  - Flowers axillary. Ovules 2 in each cell . . . 1. **SPIELMANNIA**.
  - Flowers in heads, spikes, or racemes, or paniced. Ovules 1 in each cell.
  - Flowers in spikes or heads.
  - Limb of corolla 5-lobed.
  - Ovary 4-celled.
    - Fruit of 2, rough or bristled, 2-celled nuts . . . 2. **PRIVA**.
    - Fruit of 4, striate or ridged nuts . . 3. **VERBENA**.
  - Ovary 2-celled.
    - Calyx herbaceous, splitting in fruit. Stamens 4, didynamous, perfect . . 4. **BOUCHEA**.
    - Calyx membranous, compressed, 2-ribbed. Stamens 2 perfect, 2 without anthers . . . 5. **STACHYTARPHA**.
  - Limb of corolla 4-lobed.
    - Fruit of 2, dry, separate or cohering nuts. 6. **LIPPIA**.
    - Fruit a fleshy or juicy drupe . . . 7. **LANTANA**.
  - Flowers in loose racemes or panicles. Ovary 8-celled. Fruit concealed in the coloured calyx . . . 8. **DURANTA**.
2. **VITICEÆ**. Inflorescence definite, cymose. Ovules pendulous. Stamens exserted.
  - Corolla subequally 5-lobed, with a long tube . 9. **CLERODENDRON**.
  - Corolla 2-labiate. Stamens ascending.
    - Leaves simple. (Peduncles sometimes 1-flowered) . . . 10. **CYCLONEMA**.
    - Leaves compound, digitate, very rarely 1-foliolate . . . 11. **VITEX**.
3. **AVICENNIEÆ**. Inflorescence capitate or spiked. Calyx 5-parted. Corolla 4-fid. Ovules pendulous. Embryo germinating within the pericarp.
  - Character the same as that of the tribe . . . 12. **AVICENNIA**.

Suborder 2. **Stilbineæ**. Calyx and corolla with induplicate-valvate æstivation. Anthers 2-celled. Seeds erect, albuminous, with an inferior radicle.—Leaves alternate, linear.

Calyx equally semi-5-fid. Corolla-lobes membranous, blunt. Fruit 1-seeded . . . 13. **STILBE**.

Calyx deeply and unequally cleft. Corolla-lobes subcoriaceous, acute. Fruit 2-celled, 2-seeded . . 14. *CAMPYLOSTACHYS*.

Suborder 3. **Selagineæ**. Anthers 1-celled, adnate. Seeds pendulous, with a superior radicle.—Leaves alternate.

Corolla tubular, salver- or funnel-shaped.

Stamens 2. Corolla slender. Calyx 5-toothed . 15. *AGATHELPIS*.

Stamens 2 fertile, included; 2 sterile, in the throat.

Corolla slender. Calyx 5-parted . . . . 16. *GOSELA*.

Stamens 4, more or less didynamous, all fertile.

Calyx 5- or 3-toothed or cleft.

Carpel solitary, 1-seeded . . . . . 17. *MICRODON*.

Carpels 2, subequal, cohering, each 1-seeded . 18. *SELAGO*.

Calyx 4-parted, sub-2-labiate. Carpels 2 . . 19. *WALAFRIDA*.

Corolla split down the front, 1-labiate, 4-lobed.

Calyx cleft in front.

Carpels 2, equal, each falsely 3-celled, the lateral cells empty . . . . . 20. *POLYCENIA*.

Carpels 2, very unequal, the back one abortive, the front 1-celled, 1-seeded. . . . . 21. *HEBENSTREITIA*.

Calyx 2-parted, the segments lateral. Carpels 2, nearly equal, 1-celled, 1-seeded . . . . . 22. *DISCHISMA*.

## SUBORDER 1. **Verbeneæ**. (Gen. 1–12.)

### TRIBE 1. **EUVERBENÆ**.

#### 1. **SPIELMANNIA**, Med.

Calyx 5-parted, persistent. Corolla salver-shaped, the tube swollen at base; throat closed with hairs; limb 5-fid, nearly equal, spreading. Stamens 4, didynamous, included; anther-cells parallel. Ovary 2-celled; ovules in each cell 2, erect; style short, persistent; stigma hooked. Drupe succulent, with a 2-celled nucleus.—*DC. Prod.* xi. *p.* 525.

Small, densely leafy shrubs. Leaves opposite or ternate, toothed. Flowers solitary in the upper axils, sessile, white.—2 species, one of them common.

#### 2. **PRIVA**, Adans.

Calyx tubular, 5-plaited, 5-toothed. Corolla nearly salver-shaped; tube cylindrical; limb 5-fid, subequal, oblique. Stamens 4, didynamous, included; anthers erect, sagittate. Ovary 4-celled; cells 1-ovuled; style short; stigma lateral, mostly reflexed. Fruit enclosed in the enlarged membranous calyx, hard and dry, separating at maturity into 2 normally 2-celled pieces, dorsally tubercled or echinate, rarely smooth.—*DC. Prod.* xi. *p.* 532.

Weed-like herbs, chiefly tropical. Leaves opposite, petioled, coarsely serrate. Racemes or spikes terminal and axillary, long and slender, with sub-distant small flowers.—*P. dentata*, Juss., occurs in the Eastern districts.

3. **VERBENA**, Linn.

Calyx tubular, plaited, 5-ribbed, 5-toothed. Corolla nearly salver-shaped; tube cylindrical, widening upwards, straight or curved, villous on the inside at the insertion of the stamens and bearded in the throat; limb sub-2-labiate, unequally 5-fid. Stamens 4, included; anthers ovate, subdidynamous. Ovary on a ring-like disk, 4-celled; style equalling the stamens, 2-fid or 2-lobed, one of the arms stigmatose, the other horn-like, barren. Fruit enclosed in the calyx, separating into 4 pieces, dry, striate or ridged.—*DC. Prod.* xi. p. 535.

Herbs or undershrubs, chiefly American. Stems 4-sided. Leaves opposite or ternate, very rarely alternate, entire or multifid. Flowers in spikes or heads.—*V. Bonariensis* is naturalized at the Cape, and *V. officinalis* is common and seems to be truly wild.

4. **BOUCHEA**, Cham.

Calyx tubular, elongate, 5-plaited and angled, subequally 5-toothed, truncate between the teeth. Corolla somewhat salver-shaped, the limb oblique, sub-2-labiate. Stamens in the throat of the corolla, 4, didynamous, included; anthers ovate, subdidymous. Ovary on a fleshy or disk-like gynophore, 2-celled; cells 1-ovuled; style equalling the stamens; stigma bent on one side, dilated into a sub-2-lobed, more or less infolded lamina. Fruit enclosed in the split and gaping calyx, of 2 pieces, either separating at maturity or cohering, dry and hard, mostly smooth.—*DC. Prod.* xi. p. 557; *Thes. Cap.* t. 28, t. 190.

Herbs or halfshrubs. Leaves opposite, entire, toothed or pinnatifid. Flowers in terminal spikes.—Several Cape species, Eastern.

5. **STACHYTARPHA**, Vahl.

Calyx tubular, compressed, membranous, with herbaceous (rarely only 2 marginal) ribs, commonly with 2 facial and 3 obsolete dorsal ribs, mostly plaited, truncate or 5-toothed or cleft on one side, or 2-fid, the lobes 2-toothed or entire. Corolla funnel- or salver-shaped, with straight or curved tube, the throat minutely pubescent; limb subequally 5-fid. Stamens included, the two upper without anthers, lower pair fertile; anthers 2-celled, cells linear-oblong, superposed. Ovary on an annular disk, 2-celled; cells 1-ovuled; style capillary; stigma terminal, peltate-capitate. Fruit enclosed in the slightly enlarged calyx, of 2 separable pieces.—*DC. Prod.* xi. p. 561.

Herbs or shrubs, chiefly American. Flowers in dense, bracteate spikes.—1 or 2 Cape species, probably naturalized.



6. **LIPPIA**, Linn.

Calyx small, tubular, 2-winged 2-keeled or plain, 2-fid, the lobes more or less 2-toothed, at length commonly 2-parted. Corolla somewhat funnel-shaped; tube widening upwards; limb oblique, 4-lobed, sub-2-labiate, the upper lip entire or 2-fid, lower 3-fid. Stamens 4, included, didynamous; anther-cells parallel. Ovary 2-celled; cells 1-ovuled; style short; stigma lateral. Fruit of 2 separating or cohering pieces, dry, girt with the often 2-parted calyx.—*DC. Prod.* xi. p. 572.

Herbs or shrubs, mostly American, very generally strongly scented. Flowers capitate or spiked, small, usually subtended by large bracts. Leaves opposite or whorled.—*L. asperifolia*, Rich. (*L. Capensis*, Spr.), a shrub common to Africa and South America, and *L. nodiflora*, Rich., a common littoral dwarf species of hot countries, occur in the Eastern district and at Natal.

7. **LANTANA**, Linn.

Calyx very small, membranous, subcampanulate, obsoletely 4-toothed, enlarging with the fruit and enclosing it. Corolla tubular-funnel-shaped, the tube much longer than the calyx, widening upwards; limb oblique, 4-lobed, sub-2-labiate, the upper lip entire or 2-fid, lower 3-fid. Stamens 4, included. Ovary 2-celled; cells 1-ovuled; style short; stigma bent back or obliquely capitate. Drupe fleshy or juicy, with 2 pyrenes.—*DC. Prod.* xi. p. 594.

Shrubs or undershrubs, chiefly American, mostly strongly scented. Flowers in dense heads, often lengthening into spikes during flowering. Calyx pubescent, but never villous or hairy.—*L. salviaefolia*, Jacq., our only species, is a common shrub in the Eastern district.

8. **DURANTA**, Linn.

Calyx tubular, 5-ribbed, subpiculate, the ribs running out into 5 subulate teeth, beyond the subtruncate mouth. Corolla somewhat salver-shaped, the tube longer than the calyx, slightly incurved; limb expanded, 5-fid, the lobes rounded, unequal, pubescent, as is also the throat. Stamens 4, included; filaments very short; anthers sagittate, erect. Ovary 8-celled; cells 1-ovuled; style short; stigma subcapitate, suboblique. Drupe quite hidden in the enlarged, membranous and coloured, orally-constricted calyx, containing four 2-celled pyrenes.—*DC. Prod.* xi. p. 615.

Shrubs of tropical America; but *D. Plumieri* seems to be wild near Natal. Sent by Burke and Zeyher and by Sanderson.

## TRIBE 2. VITICEÆ.

9. **CLERODENDRON**, R. Br.

Calyx bell-shaped, rarely tubular, 5-fid or 5-toothed. Co-

rolla funnel- or salver-shaped ; tube mostly much longer than the calyx ; limb 5-parted, lobes subequal. Stamens 4, much exserted, subdidynamous. Ovary 4-celled ; cells 1-ovuled, ovule pendulous ; style filiform, exserted ; stigma 2-fid, acute. Drupe juicy or fleshy, contained in the enlarged calyx, mostly 2-4-lobed, containing 4 or fewer 1-celled pyrenes.—*DC. Prod. xi. p. 658.*

Shrubs or trees, chiefly tropical.—*C. glabrum*, Sond., the only Cape species, occurs in the Eastern district and Caffraria.

#### 10. CYCLONEMA, Hochst.

Calyx short, bell-shaped, 5-fid. Corolla irregular, the tube reclinate ; limb unequally 5-lobed, 2-labiate, spreading, the after segment resupinate, concave-galeate, the rest flat. Stamens 4, subdidynamous much exserted ; filaments ascending, hairy at base, in the bud rolled up under the galea ; anthers sagittate, cells parallel. Ovary 4-celled ; cells 1-ovulate ; style filiform, longer than the stamens ; stigma 2-fid. Drupe scarcely fleshy, with 4 or fewer pyrenes, lobed, sitting in the small calyx.—*DC. Prod. xi. p. 675 ; Thes. Cap. t. 27.*

Shrubs or small undershrubs, almost herbaceous, with opposite or ternate, simple leaves, and axillary, few-flowered, trichotomous cymes, sometimes reduced to 1-flowered, 2-bracteolate peduncles.—3 or 4 species, near Natal.

#### 11. VITEX, Linn.

Calyx cup-like, bell-shaped or funnel-shaped, 5-toothed or 5-fid. Corolla 2-labiate, the upper lip 2-fid, the lower 3-fid, the middle segment larger than the rest and projecting ; throat often enlarged. Stamens 4, didynamous, ascending, exserted ; anthers obcordate. Ovary 4-celled ; cells 1-ovuled ; style filiform, 2-fid. Drupe in the enlarged and often torn calyx, juicy, with one 4-celled pyrene.—*DC. Prod. xi. p. 682.*

Trees or shrubs, chiefly tropical. Leaves opposite, mostly digitate, rarely 1-foliolate. Cymes trichotomous or simple, axillary or paniced.—3 Cape species, from the Eastern district and Natal.

#### TRIBE 3. AVICENNIEÆ.

#### 12. AVICENNIA, Linn.

Calyx 5-parted, equal, the sepals concave, obtuse, imbricate. Corolla-tube short, bell-shaped ; limb 4-fid, the back lobe mostly broader and shorter. Stamens 4, glabrous, shortly exserted, subequal ; anther-cells distinct, collateral. Ovary sessile, ovate, without style, or conoid, tapering into a style, silky, 2-celled ; ovules in pairs, collateral, pendulous, 1 only fertilized ; stigmata 2, small. Fruit obliquely ovate, com-

pressed, tipped with the rudimentary style ; pericarp coriaceous, closely investing the seed (which has no proper integument). Albumen scarcely any ; embryo fleshy, green, erect, with very thick reniform, conduplicate cotyledons ; radicle long, thick, densely and softly hairy.—*DC. Prod.* xi. p. 698.

Littoral, evergreen shrubs or trees of warm countries. Leaves opposite, leathery, entire, glabrous above, hoary beneath. Peduncles axillary, or 3 at the ends of the branches, mostly 3-headed. Flowers small.—*A. officinalis*, Linn., a widely-dispersed species, occurs at Natal.

#### SUBORDER 2. **Stilbineæ.** (Gen. 13–14.)

##### 13. **STILBE**, Berg.

Calyx equal, 5-fid to the middle, the segments with inflexed margins, pubescent-ciliate. Corolla 5-fid, the throat hairy ; segments linear, subtruncate, membranous, the 2 posterior a little longer, connate. Stamens 4, with a rudimentary fifth. Utricle thin-shelled, subturbinate, 5-ribbed, 1-seeded.—*E. Mey. in Comm. Drège*, p. 279 ; *DC. Prod.* xii. p. 606. Also *Eurylobium*, *Hochst.*, *DC. l. c.* p. 607.

Heath-like shrubs, with rigid, linear, crowded, alternate leaves, and terminal, densely spiked or capitate flowers.—A few species, dispersed.

##### 14. **CAMPYLOSTACHYS**, E. Mey.

Calyx very deeply 5-cleft, the three anterior clefts nearly to the base. Corolla 4–5-fid ; segments acute, subcoriaceous, 3-nerved. Stamens 4. Capsule subglobose, 2-celled, 2-seeded, opening in 4 parts at the apex.—*E. Mey. l. c.* p. 278 ; *DC. Prod.* xii. p. 605. Also *Euthystachys*, *A. DC. in DC. Prod.* xii. p. 606.

Shrubs, with the habit of *Stilbe*, except that the spikes are more or less nodding.—2 species, Western.

#### SUBORDER 3. **Selagineæ.** (Gen. 15–22.)

##### 15. **AGATHELPIS**, Choisy.

Calyx tubular, 5-toothed, plaited, adnate to its subtending bract, deflexed in fruit. Corolla-tube long, slender, cylindrical, curved ; limb subequally 5-lobed, lobes short and fleshy. Stamens 2, included ; filaments very short. Utricle solitary, semiterete, enclosed in the calyx.—*E. Mey. l. c.* p. 252 ; *DC. Prod.* xii. p. 23.

Slender, twiggy undershrubs, with linear leaves and dull coloured, sweetly scented flowers, in lax, terminal spikes.—Several species, dispersed.

##### 16. **GOSELA**, Choisy.

Calyx deeply 5-parted. Corolla with a long tube and short 5-lobed limb. Stamens 2 fertile, subsessile within the tube, and

2 sterile in the throat. Ovary 2-celled; style filiform, elongate; stigma simple.—*DC. Prod.* xii. p. 22.

*G. Eckloniana*, Ch., is a slender herb, with linear leaves and hairy spikes of flowers.

### 17. MICRODON, Choisy.

Calyx tubular, 5-toothed, plaited, scarcely adnate to the bract at base. Corolla-tube funnel-shaped; limb sub-2-labiate, the two after-segments suberect, the lateral spreading, the front one deflexed. Stamens 4, didynamous, 2 exserted, 2 subincluded. Utricle by abortion solitary, semiterete, enclosed in the calyx.—*E. Mey. l. c.* p. 253; *DC. Prod.* xii. p. 23.

Undershrubs, with scattered or tufted leaves, and very dense, terminal spikes of flowers, subtended by large, expanded, often membranous bracts.—4 or 5 species.

### 18. SELAGO, Linn.

Calyx 3-5-cleft, free or slightly adnate at base, the anterior cut generally the deepest. Corolla-tube funnel-shaped or cylindrical; limb 5-fid, unequally spreading, the back sinus sometimes shortest. Stamens 4, didynamous. Capsule 2-celled or 2-parted; cells 1-seeded.—*E. Mey. l. c.* p. 254; *DC. Prod.* xii. p. 8.

A large genus of herbs or undershrubs, diversified in aspect. Leaves small, crowded, scattered or tufted, entire or toothed. Flower-spike capitate, or in compound corymbs, blue white or cream-coloured, often very sweetly scented, especially at night.—71 species, dispersed.

### 19. WALAFRIDA, E. Mey.

Calyx sub-2-labiate, 4-parted, the front segments rather broadest. Corolla-tube cylindrical, curved; limb regular, 5-lobed. Stamens 4, didynamous, included. Ovary subglobose; style filiform, exserted; stigma clavate, incurved. Carpels 2, at length separating, subsemiglobose, falsely 3-celled; lateral cells empty, hairy within, medial 1-seeded.—*E. Mey. l. c.* p. 272; *DC. Prod.* xii. p. 21.

An undershrub, found in the Eastern district, 1-1½ foot high, with ovate, acuminate leaves and spiked flowers. Corolla bluish.

### 20. POLYCENIA, Choisy.

Calyx cleft in front. Corolla with its tube deeply cleft in front, 1-lipped; lip 4-lobed. Stamens 4, didynamous, very short, on the margins of the lip of corolla. Carpels 2, equal, at length separating, falsely 3-celled, the lateral cells empty, medial 1-seeded.—*E. Mey. l. c.* p. 245; *DC. Prod.* xii. p. 29.

Shrubs or herbs, with scattered leaves and densely spiked flowers.—Several species, dispersed.

21. **HEBENSTREITIA**, Linn.

Flowers of *Polycenia*. Carpels 2, unequal, at length separating, 1-celled, the back one often abortive, resting on the front, which is 1-seeded.—*E. Mey. l. c. p.* 246; *DC. Prod. xii. p.* 3.

Undershrubs or herbs, some annual, with narrow, scattered leaves and long spikes of orange or yellow flowers.—Several species, dispersed.

22. **DISCHISMA**, Choisy.

Calyx 2-parted, the segments lateral. Corolla and stamens of *Polycenia*. Carpels 2, nearly equal, 1-celled, 1-seeded.—*E. Mey. l. c. p.* 250; *DC. Prod. xii. p.* 6.

Separated from *Hebenstreitia*, on account of the 2-parted calyx. Flowers in dense villous spikes.—Several species, dispersed.

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ORDER XCIV. **PLUMBAGINÆÆ.**

Calyx tubular, persistent, dry, with plicate æstivation. Corolla regular, either tubular or of 5 separate petals. Stamens 5, opposite the petals or the lobes of corolla, hypogynous in the monopetalous genera, adnate to the claws of the petals in the polypetalous. Ovary free, 1-celled; ovule 1, pendulous from a long cord, rising from the base of the cell; styles 5 (rarely 3-4). Fruit a utricle; seed pendulous, albuminous.—Herbs or halfshrubs, often growing near the sea or in salt ground, with alternate or tufted leaves, and cymose or fascicled flowers. Corolla soon withering. Calyx often coloured.

Tribe 1. **PLUMBAGÆÆ.** Corolla gamopetalous, salver- or funnel-shaped. Stamens hypogynous.

Calyx tubular, 5-toothed, with 5 glandular ribs . . . . 1. **PLUMBAGO.**

Calyx ovate, 5-winged, the wings cross-ribbed and furrowed . . . . . 2. **VOGELIA.**

Tribe 2. **STATICEÆ.** Corolla 5-petalled. Stamens attached to the claws of the petals.

Calyx funnel-shaped, with a 5-nerved, 5-lobed limb . . . 3. **STATICE.**

1. **PLUMBAGO**, Tourn.

Calyx tubular, 5-toothed, membranous, with 5 broad, green, glandular ribs. Corolla salver-shaped, the tube exserted; limb 5-parted. Stamens 5, hypogynous. Ovary ovate or oblong; style filiform; stigmas 5, filiform, glandular within.



Utricle membranous, tipped with the hardened style-base, circumscissed at base, thence to the middle splitting into valves, which cohere at apex. Seed ovate or oblong.—*DC. Prod.* xii. p. 690.

Herbs or shrubs, often climbing. Flowers in spikes.—2 Cape species, dispersed.

## 2. *VOGELIA*, Lam.

Calyx ovate, vertically 5-winged, contracted at the mouth, composed of 5 broad, strongly ribbed, papery, cross ridged and furrowed, slightly cohering sepals. Corolla funnel-shaped, the tube exerted; limb 5-parted. Stamens 5, hypogynous. Ovary linear; style filiform; stigmas 5, long, linear, glandular within. Utricle linear-oblong, 5-angled, splitting in 5 valves.—*DC. Prod.* xii. p. 695; *Harv. Thes. Cap.* t. 198.

Erect, branching undershrubs. Leaves small, scurfy. Flowers in dense terminal spikes.—1 Cape species, *V. Africana*, Lam., a native of the Northern frontier and Namaqualand.

## 3. *STATICE*, Willd.

Calyx mostly funnel-shaped, with a dry, membranous, 5-nerved, 5- or rarely 10-lobed limb. Corolla of 5, either quite separate or slightly cohering petals (or very rarely gamopetalous). Stamens 5, attached to the claws of the petals. Ovary oblong or linear; styles 5, filiform. Utricle irregularly bursting.—*DC. Prod.* xii. p. 634.

Perennial herbs of seacoasts and salt ground, with a thick rhizome and many radical leaves, or branching undershrubs. Leaves coriaceous, mostly entire. Scapes branching, mostly cymose, the flowers secund, fugacious.—Several Cape species.

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## ORDER XCV. BORAGINEÆ.

Calyx 5-4-parted, mostly persistent, sometimes enlarged in fruit. Corolla 5-lobed, regular or subirregular. Stamens as many as corolla-lobes, alternate with them. Ovary normally of 2 bilocular carpels, either combined in a solid body, or 4-lobed or -parted (like 4 separate carpels); ovules solitary; style single, simple or once or twice 2-fid. Fruit either fleshy or dry, drupe-like or nut-like. Seeds pendulous, filling the cavity; albumen little or 0; cotyledons leafy, flat or plaited.—A large Order in both temperate and tropical zones. Leaves alternate, very rarely opposite. Pubescence mostly rough. Inflorescence a scorpioid cyme, or 1-sided raceme.

\* *Ovary undivided ; style terminal.*

Tribe 1. CORDIÆ. Style twice forked at the summit, rarely 0. Fruit succulent, 4-seeded. Cotyledons plaited.—Shrubs.

Calyx tubular, 4-5-toothed. Corolla funnel- or salver-shaped . . . . . 1. CORDIA.

Tribe 2. EHRETIEÆ. Style 2-lobed at apex. Fruit succulent, 4-seeded. Cotyledons flat.—Shrubs.

Stamens exserted. Style 2-fid ; stigma capitellate.

Berry fleshy or nearly dry . . . . . 2. EHRETIA.

Stamens included ; style short ; stigma entire or 2-lobed ; fruit of 2 separable carpels or 4-parted 3. TOURNEFORTIA.

Tribe 3. HELIOTROPEÆ. Style simple, terminal. Fruit nearly dry, separable into 2 parts.—Shrubs or herbs.

Corolla salver-shaped, with open throat. Nuts 4, at length separating . . . . . 4. HELIOTROPIMUM.

Corolla salver-shaped, with a constricted, 5-rayed throat . . . . . 5. HELIOPHYTUM.

\*\* *Ovary deeply 4-lobed ; style simple, rising from the base of the lobes.*

Tribe 4. BORAGÆ. Ovary consisting either of 2 separate 2-celled carpels or deeply 4-lobed. Style springing from the base of the lobes.—Shrubs or herbs.

Nuts not united to the style or style-base.

Corolla more or less irregular, funnel-shaped, nude or with small scales at the origin of the filaments. Nuts imperforate at base.

A small hairy-edged scale at the base of each stamen . . . . . 6. LOBOSTEMON.

No scale at the base of the stamen . . . . . 7. ECHIUM.

Corolla regular, nude or usually with scales or prominences in the throat, opposite the lobes.

Nuts hollowed out (perforate) at base. Corolla-tube closed by rough scales.

Corolla-lobes erect. Calyx 5-angled ; lobes ovate :—an undershrub . . . . . 8. STOMATECHIUM.

Corolla-lobes spreading. Calyx 5-parted or -cleft . . . . . 9. ANCHUSA.

Nuts not hollowed (imperforate) at base.

Corolla open-mouthed. Stigma capitate. Nuts ovate . . . . . 10. LITHOSPERMUM.

Corolla closed with scales. Stigma obtuse. Nuts compressed . . . . . 11. MYOSOTIS.

Nuts inserted on a flat, more or less lateral area, united with the style or style-base, not perforate at base. Corolla regular, with or without scales in the throat.

Calyx not enlarged in fruit. Corolla-lobes blunt.

Corolla salver-shaped. Nuts margined, with hooked bristles . . . . . 12. ECHINOSPERMUM.

Corolla funnel-shaped. Nuts not margined, irregularly covered with hooked bristles . . . . . 13. CYNOGLOSSUM.

Calyx enlarged, its segments and those of corolla taper-pointed . . . . . 14. TRICHODESMA.

## TRIBE 1. CORDIÆÆ.

1. **CORDIA**, Plum.

Calyx tubular, 4-5-toothed (rarely 3-6-8-toothed). Corolla funnel or salver-shaped; limb 4-5-parted (rarely 6-12). Style twice 2-fid, mostly exserted. Drupe ovate or globose, pulpy, girt with the persistent calyx.—*DC. Prod.* ix. p. 471.

Trees or shrubs, mostly tropical, with often handsome flowers.—There are 2 or more South African species, natives of the interior and Natal.

## TRIBE 2. EHRETIEÆ.

2. **EHRETIA**, Linn.

Calyx 5-lobed, valvate or imbricate in bud. Corolla salver-shaped or subrotate, the tube long and cylindrical, or short (sometimes very short), subcampanulate; lobes 5, imbricate. Stamens with subulate filaments, exserted; anthers ovate. Ovary 4-celled; style 2-fid or 2-parted; stigmas mostly capitate. Berry either fleshy or nearly dry. Seeds with little or no albumen.—*DC. Prod.* ix. p. 502; *Thes. Cap.* t. 6.

Shrubs or small trees, chiefly tropical. Leaves alternate or tufted, entire. Flowers cymoso-corymbose.—2 (or more) species, in the Eastern district.

3. **TOURNEFORTIA**, Linn.

Calyx 5-4-parted. Corolla salver-shaped, nude in the throat. Stamens 5-4, included. Style mostly short, rarely 0; stigma undivided or 2-lobed, peltate, subconical. Fruit either of 2 undivided, 2-celled, 2-seeded carpels, or 4-parted.—*DC. Prod.* ix. p. 513.

Erect or climbing shrubs, rarely herbs. Leaves alternate, entire, mostly petioled. Scorpioid cymes nude, branching; corolla white or yellowish.—*T. tuberculosa*, Cham., our only species, is half herbaceous. Eastern district.

## TRIBE 3. HELIOTROPEÆ.

4. **HELIOTROPIMUM**, Tourn.

Calyx 5-parted or rarely 5-toothed, persistent. Corolla salver-shaped, the throat open, sometimes bearded, the lobes of the limb with a simple plait, or rarely with an intermediate tooth. Style short; stigma subconical. Nuts 4, 1-locular, the young cohering at base, at length separable, not on a common receptacle.—*DC. Prod.* ix. p. 531.

Herbs or undershrubs, villous or glabrous. Leaves entire or toothed, rarely opposite. Cymes scorpioid; corolla white or purplish.—A large tropical genus, of which some 5 species are South African.

## 5. HELIOPHYTUM, DC.

Calyx 5-parted or 5-fid, persistent. Corolla salver-shaped; throat strongly constricted, 5-rayed, the lobes of limb mostly undulate. Anthers included. Style very short; stigma capitate or conical. Nuts 2, separable, 2-celled, 2-seeded, not on a common receptacle.—*DC. Prod.* ix. p. 551.

Herbs or undershrubs, with the habit of *Heliotropium*, chiefly American.—*H. lineare*, A. DC., the only Cape species, is doubtfully referable here; with the habit of a *Heliotropium*, it has the 4-parted fruit of a *Heliotropium*.

## TRIBE 4. BORAGÆÆ.

## 6. LOBOSTEMON, Lehm.

Calyx 5-parted, the lobes lanceolate. Corolla funnel-shaped, subregular, the tube about equalling the calyx, gradually dilating into a nude throat; lobes ovate, acute, suberect, equal. Stamens mostly exserted, inserted about or below the middle of corolla-tube, each furnished on the inside, at base, with a hairy-bordered, erect or reflexed scale (sometimes very small); anthers subglobose. Style filiform, as long as the stamens; stigma simple. Nuts 4, granulate, sub-3-gonous, imperforate at base.—*DC. Prod.* x. p. 4.

Herbs or shrubs, all South African, with scattered, sessile, entire leaves, and racemose, spiked or capitate, mostly blue or purple or pinkish flowers.—40 species, dispersed.

## 7. ECHIUM, Tourn.

Calyx 5-parted (rarely 2–3–4 lobes connate); lobes linear-lanceolate. Corolla-tube cylindrical or funnel-shaped, the limb unequally and obtusely 5-lobed, the throat dilated, nude. Stamens unequal, mostly exserted, without any scale or dilatation at base; anthers dorsally fixed. Style filiform, mostly exserted; stigmas more or less 2-lobed. Nuts 4, ovate or turbinate, rugose, scabrous, imperforate at base.—*DC. Prod.* x. p. 13.

Shrubs or herbs. Leaves alternate, entire, mostly very rough. Flowers spiked or panicled, purple reddish or blue.—11 Cape species, besides one or two naturalized.

## 8. STOMATECHIUM, Lehm.

Calyx 5-fid, 5-angled; lobes ovate, acute. Corolla tubular, regularly 5-lobed, the lobes roundish, erect, the throat with 5 roundish, fleshy, muricate scales, opposite the lobes. Stamens in the middle of the tube; filaments very short; anthers included, acuminate. Style equalling the corolla; stigma simple.

Nuts 4, roundish, rough, hollowed out at base.—*DC. Prod. x. p. 40.*

*S. papillosum*, Lehm., is a little-known undershrub, with angular stems, smooth below, scabrous above. Leaves sessile, papillose-scabrid above. Racemes spicate, secund, in a panicle; corolla blue, small.—Only found by Thunberg.

### 9. *ANCHUSA*, Linn.

Calyx 5-fid or 5-parted. Corolla-tube straight, terete; limb oblique or spreading, 5-parted, the throat closed with 5 obtuse, papillose or hispid scales, opposite the corolla-lobes. Anthers included. Nuts 4, in the bottom of the calyx, hollowed out at base, the hollow with a puckered margin, ridgewarted, rough between the ridges.—*DC. Prod. x. p. 41.*

Annual or perennial herbs, with entire leaves. Spikes mostly bracteate, in pairs; corolla purple blue or white, rarely yellowish.—2 or 3 South African species.

### 10. *LITHOSPERMUM*, Tourn.

Calyx 5-parted; lobes equal. Corolla funnel- or rarely salver-shaped, pervious, the throat nude or rarely with 5 swellings alternating with the stamens, hairy or smooth; lobes of limb rounded. Anthers oblong, nearly sessile, and mostly included. Stigma capitate, sub-2-lobed. Nuts ovate, smooth or wrinkled, truncate at base, imperforate.—*DC. Prod. x. p. 73.*

Herbs or undershrubs, variable in aspect. Leaves entire, mostly simply hairy. Flowers spiked or racemose, bracteate, often small, of several colours.—7 or 8 South African species, dispersed.

### 11. *MYOSOTIS*, Linn.

Calyx 5-parted, 5-fid or 5-toothed. Corolla salver- or funnel-shaped, the tube straight, about equalling the calyx, the limb 5-fid, obtuse, flat or concave, the throat mostly furnished with 5 short, obtuse scales; corolla-lobes twisted to the left. Stamens mostly included; anthers oval-oblong, apiculate. Stigma obtuse, sub-2-lobed. Nuts 4, in the bottom of the calyx, elliptical, compressed, very smooth, quite glabrous, with a minute basal depression, imperforate.—*DC. Prod. x. p. 104.*

Villous herbs, widely dispersed in the eastern hemisphere, chiefly northern. Radical leaves tapering into petioles, cauline sessile. Flowers in scorpioid cymes, lengthening out in flowering. Corolla blue red or white, very rarely yellow.—A large genus, of which there are 2 Cape species.

### 12. *ECHINOSPERMUM*, Sw.

Calyx 5-parted. Corolla salver-shaped, the throat closed



with short scales; lobes of limb obtuse. Stamens included. Stigma entire or emarginate. Nuts 4, laterally affixed to a central column, imperforate at base, 3-cornered or compressed, the dorsal surface margined, or more usually girt with 1-3 rows of hooked bristles, otherwise smooth or tubercled.—*DC. Prod. x. p. 135.*

Annual or perennial herbs, simple or branched. Leaves oblong, lanceolate or linear. Racemes bracteate; corolla blue or white.—2 Cape species.

### 13. CYNOGLOSSUM, Tourn.

Calyx 5-parted. Corolla funnel-shaped; tube about as long as the calyx, the throat closed by blunt scales; lobes very obtuse. Stamens included. Stigma entire or emarginate. Nuts 4, imperforate at base, affixed to the style-base, roundish, convex or depressed, not margined, covered all over with hooked bristles.—*DC. Prod. x. p. 146.*

Herbs or rarely undershrubs. Leaves entire. Racemes mostly spicate, bracteate or ebracteate; corolla blue purple or white.—2 Cape species, 1 with bracteate, the other with ebracteate racemes.

### 14. TRICHODESMA, R. Br.

Calyx 5-parted or deeply 5-fid, mostly enlarging in fruit, the lobes broad-based, taper-pointed. Corolla scarcely longer than the calyx, the tube widely cylindrical, the throat without scales, the lobes broad-based, taper-pointed, spirally twisted in bud. Stamens partly exerted; anthers much longer than the filaments, conniving in a cone, villous at back, with long, subulate points. Stigma subsimple. Nuts 4-1, imperforate at base, attached by the whole inner face to the central, quadrangular column.—*DC. Prod. x. p. 171; Thes. Cap. t. 40.*

Erect, branching, roughly pubescent herbs. Leaves alternate or opposite, sessile, entire. Pedicels lateral, subracemose. Nuts various; in the Cape species bordered with hooked or swollen bristles.—2 Cape species, Eastern.

## ORDER XCVI. LABIATÆ.

Calyx tubular, equal or 2-lipped, persistent. Corolla 2-lipped, upper lip entire or 2-fid, often vaulted, lower 3-lobed. Stamens 4, didynamous (2 sometimes abortive or absent); anthers 2-celled, cells sometimes confluent or 1 abortive. Ovary free, deeply 4-lobed; ovules solitary; style 1, from the base of the ovarian lobes; stigma 2-fid. Fruit of 4 separable nuts, in the base of the persistent calyx. Seed erect, without albumen.—Herbs or shrubs, with 4 angled stems and strictly opposite leaves. Flowers in short, whorl-like cymes in the

axils of the upper leaves, or capitate, or in branched cymes, rarely solitary. Natives generally of the drier and warmer parts of the globe, very many of them aromatic; some, as the Mints, Thyme, Lavender, Patchouli, etc., eminently so. This large Order, which is very imperfectly represented in South Africa, is arranged by Bentham under 8 tribes, including 120 genera.

Tribe 1. OCIMEÆ. Stamens declinate.

\* Corolla-lobes of nearly equal length, the 4 upper more or less connate in an upper lip, the lowest narrower, declinate, flat or subconcave.

Fruiting-calyx deflexed, the upper tooth very large, ovate, decurrent on the tube . . . . . 1. OCIMUM.

Fruit-calyx declined, 5-toothed, the upper tooth ovate, not decurrent; corolla-tube short, included . . . . . 2. MOSCHOSMA.

Fruit-calyx suberect, with 5 subequal teeth; corolla-tube long, exserted . . . . . 3. SYNCLOSTEMON.

\*\* Lowest lobe of the corolla elongate, concave.

Upper stamens abortive; fruit-calyx fleshy . . . . . 4. HOSLUNDIA.  
All the stamens fertile.

Fruit-calyx toothed, the teeth not spiny, mouth open . . . . . 5. PLECTRANTHUS.

Fruit-calyx truncate, circumcised at base . . . . . 6. ÆOLANTHUS.

Fruit-calyx with 5 equal, spinous teeth . . . . . 7. PYCNOSTACHYS.

\*\*\* Lowest lobe of corolla contracted at base, then saccate, abruptly deflexed; calyx sharply 5-toothed . . . . . 8. HYPTIS.

Tribe 2. SATURINEÆ. Stamens distant, straight, spreading, or approaching under the upper lip of corolla; anthers 2-celled; lobes of corolla flat.

Corolla subequally 4-lobed; stamens 4, equal . . . . . 9. MENTHA.

Corolla 2-labiate, upper lip erect, subentire, lower 3-lobed, spreading; stamens 4, didynamous . . . . . 10. MICROMERIA.

Tribe 3. MONARDEÆ. Stamens 2, straight or ascending; anthers either 1-celled, or of 2 cells separated by a filiform connective.

Stamens 2, in the throat; anthers with a long, filiform connective, bearing a fertile cell at its upper end . . . . . 11. SALVIA.

Tribe 4. STACHYDEÆ. Stamens 4, parallelly ascending under the vaulted or subconcave upper lip of corolla.

Stamens included; anthers 1-celled; style bearded below the apex . . . . . 12. ACROTOME.

Stamens exserted; anthers 2-celled; style nude.

Style subequally 2-fid, the lobes subulate.

Calyx subequally 5-toothed or -fid . . . . . 13. STACHYS.

Calyx wider upwards, with 5 large and 5-10 smaller spreading teeth . . . . . 14. BALLOTA.

Style unequally 2-fid, one lobe very short; corolla very hairy.

Upper lip of corolla not longer than the lower.

Calyx 8-10-toothed . . . . . 15. LEUCAS.

Calyx 5-toothed . . . . . 16. LASIOCORYS.

Upper lip of corolla much longer than lower,

erect, entire . . . . . 17. LEONOTIS.

Tribe 5. AJUGÆ. Stamens as in *Stachydeæ*, but the upper lip of corolla very short or deflexed or obsolete.

Upper lip of corolla 4-parted, lower much larger,

concave . . . . . 18. TEUCRIUM.

Upper lip of corolla emarginate, lower lip 3-fid . . 19. AJUGA.

### TRIBE 1. OCIMÆ.

#### 1. OCIMUM, Linn.

Calyx ovate or bell-shaped, 5-toothed, winged by the decurrent margins of the upper, roundish or obovate, membranous tooth, deflexed after flowering, the throat nude or rarely hairy within. Corolla-tube mostly shorter than the calyx, not ringed inside, the throat mostly bell-shaped, limb 2-lipped; upper lip 4-fid, lower scarcely longer, declinate, entire, flat or shortly concave. Stamens 4; filaments free, the upper often with a tooth or tuft of hairs at base. Style shortly 2-fid, the lobes subequal. Disk of 1-4 fleshy glands. Nuts ovoid or subglobose, smooth.—*DC. Prod.* xii. p. 31.

Herbs or small shrubs, from the warmer parts of the globe. Floral leaves bract-like, commonly deciduous. Cymules 6-10-flowered, in a lax raceme.—8 South African species, all Eastern.

#### 2. MOSCHOSMA ?, Reichb.

Calyx ovate or bell-shaped, 5-toothed, with the upper tooth larger, not decurrent, after flowering subdeclinate, naked in the throat. Corolla-tube included; limb sub-2-labiate, the upper lip shortly 4-fid, lower entire, flattish, all the lobes subequal. Stamens 4; filaments free, toothless. Style clavate-capitate. Nuts ovate-compressed, smooth.—*DC. Prod.* xii. p. 49.

*M. ? riparia*, Hochst., of which the fruit is unknown, and the genus therefore doubtful, is our only species: found by Krauss, at Natal. It has a viscid pubescence; ovate, petioled, crenate, thickish leaves, and a much-branched panicle of small flowers.

#### 3. SYNCOLOSTEMON, E. Mey.

Calyx inflated-tubular, equal or subincurved, the 5 teeth equal or the lower longest. Corolla-tube straight, exserted, the upper lip 4-toothed, lower entire, flat or concave. Stamens 4; filaments free from each other, but adnate to corolla-tube, toothless. Style shortly or scarcely 2-fid. Disk lobed. Nuts oblong, compressed, smooth.—*DC. Prod.* xii. p. 53.

South African shrubs. Leaves small, tough, often tufted in axils.

Racemes terminal, simple or branched. Floral leaves bract-like, deciduous. Calyces often coloured.—5 species, from Caffraria and Natal.

#### 4. HOSLUNDIA, Vahl.

Calyx tubular, shortly 5-toothed, with subequal teeth, inflated and berry-like in fruit. Corolla-tube straightish, exserted, the upper lip shortly 3-4-fid, lower somewhat longer, concave. Two back stamens short, without anthers; two front fertile. Style shortly 2-fid. Disk glandular. Nuts concealed in the fleshy calyx.—*DC. Prod.* xii. p. 54.

Small shrubs, with much-branched inflorescence.—*H. decumbens*, Benth., from Delagoa Bay, is our only species.

#### 5. PLECTRANTHUS, L'Hér.

Calyx at first bell-shaped, 5-toothed, in fruit enlarged, either declinate straight incurved or inflated, with equal teeth or variously 2-labiate; or erect, tubular or bell-shaped, equally 5-toothed. Corolla-tube exserted, gibbous or spurred on the upper side at base, then declined, bent back or straightish, the throat equal or rarely inflated; upper lip 3-4-fid; lower entire, mostly longer, concave. Stamens 4, declinate, the lower pair longer; filaments free, toothless; anthers reniform, with confluent cells. Style shortly 2-fid.—*DC. Prod.* xii. p. 55.

Herbs or shrubs, with terminal, simple or branched, racemose inflorescence; the cymules laxly few-flowered.—Several South African species, all Eastern.

#### 6. ÆOLANTHUS, Mart.

Calyx ovate-bellshaped, truncate, with obsolete teeth, the throat nude within; in fruit contracted at the mouth, circumscissid at base. Corolla-tube exserted, bent down beyond the calyx, dilated upwards; the upper lip bluntly 4-toothed; lower entire, longer, concave. Stamens 4; filaments free, toothless. Style shortly 2-fid. Disk glandular. Nuts roundish, compressed.—*DC. Prod.* xii. p. 80.

Herbs, with somewhat fleshy leaves of small size. Inflorescence laxly paniced.—*Æ. parvifolius*, Benth., our only species, occurs near Natal.

#### 7. PYCNOSTACHYS, Hook.

Calyx ovate, subequal, with 5 subulate, spinous teeth. Corolla-tube exserted, bent down; upper lip 4-toothed; lower entire, concave. Stamens 4; filaments free, toothless. Style subulate, minutely 2-fid. Nuts roundish, smooth.—*DC. Prod.* xii. p. 83.

Erect, rigid herbs, with densely-spiked, terminal inflorescence, the floral leaves bract-like and shorter than the calyx.—*P. reticulata*, Benth., our only species, occurs at Natal.

8. **HYPTIS**, Jacq.

Calyx ovate, bell-shaped or tubular, with 5 acute teeth. Corolla-tube cylindrical or shortly ventricose; upper lip of 4 flat, erect or spreading lobes; lower saccate, during flowering abruptly deflexed, entire or emarginate, contracted at base and callous-margined, or on each side toothed. Stamens 4; filaments toothless. Style shortly 2-fid or entire. Nuts smooth or dotted, rarely winged.—*DC. Prod.* xii. p. 127.

A large, chiefly American, genus of herbs or shrubs.—*H. pectinata*, Poit., a widely-dispersed species, occurs near Natal.

9. **MENTHA**, Linn.

Calyx bell-shaped or tubular, 5-toothed, equal or nearly so, nude or villous within. Corolla-tube included; limb subequal, 4-fid, the upper lip rather broader, emarginate. Stamens 4, equal, erect, distant; filaments glabrous, nude; anthers 2-celled, cells parallel. Style shortly 2-fid. Nuts smooth.—*DC. Prod.* xii. p. 164.

Herbs, often subaquatic. Inflorescence in dense axillary, spiked or capitate, false whorls. Flowers small. Foliage pungently aromatic. "Mints" of the gardens.—A few occur at the Cape.

10. **MICROMERIA**, Benth.

Calyx tubular, 13- or rarely 15-striate, 5-toothed; teeth subequal, straight, or slightly in 2 lips, the throat mostly villous. Corolla-tube straight, nude within, mostly shorter than the calyx; limb 2-lipped, the upper lip erect, flattish, entire or emarginate, lower spreading, of 3 flat subequal lobes. Stamens 4, didynamous, lower longer, ascending, arched, shorter than the corolla or exserted, divergent at apex; anthers 2-celled, the cells parallel or divergent, often oblique. Style equally or unequally 2-fid. Nuts smooth.—*DC. Prod.* xii. p. 212.

Small undershrubs or herbs. Inflorescence of axillary or spiked false-whorls. Flowers small.—*M. biflora*, Benth., a small, much-branched and tufted species, occurs in our Eastern district.

11. **SALVIA**, Linn.

Calyx 2-labiate; the upper lip entire or 3-toothed; lower 2-fid; throat nude. Corolla with short or long tube, equal or swelling upwards, 2-lipped; upper lip erect or rarely spreading, straight or falcate, entire or emarginate; lower spreading, 3-lobed, the middle lobe broader. Stamens 2 (the upper pair absent or rudimentary), inserted within the throat of corolla; filament short, articulated with the anther, and mostly pro-



longed beyond the joint; anther dimidiate, the connective long, linear, prolonged backwards under the upper lip of corolla, and bearing a fertile anther-cell at the summit, in front shorter, variously shaped, with or without a barren cell. Disk forming an antitious gland. Style 2-fid. Nuts glabrous.—*DC. Prod. xii. p. 262.*

A vast and widely-dispersed genus, the "Sage" of gardens.—There are many Cape species, some large shrubs, others herbaceous, dispersed through the colony.

## 12. ACROTOME, Benth.

Calyx tubular-bellshaped, 10-nerved, obliquely 5–10-toothed. Corolla-tube terete, nude within; the upper lip erect, subentire, subforficulate; lower spreading, 3-fid, the medial lobe wider. Stamens included; anthers 1-celled, the back ones short, ovate, front ones twice as long, oblong, nodding on the recurved filament. Style included, bearded below the tip. Nuts sharply 3-sided, truncate.—*DC. Prod. xii. p. 435.*

South African herbs or halfshrubs, known by their anthers and style. False-whorls axillary, few- or many-flowered.—3 species, North-Eastern.

## 13. STACHYS, Linn.

Calyx tubular-bellshaped, 5–10-nerved, equal or obliquely 5-toothed, the teeth equal or the upper larger, or rarely the 3 uppermost united in a lip. Corolla-tube equal, included or exerted, mostly annulate within, most often incurved but dilated at the throat; upper lip erect or spreading, usually rather concave, entire or scarcely emarginate, rarely elongate and 2-fid; lower mostly longer, spreading, 3-lobed, the medial lobe much the largest. Stamens 4, ascending, the lower pair longer, at length often deflexed; filaments nude; anthers 2-celled. Style subequally 2-fid, the lobes subulate. Nuts obtuse.—*DC. Prod. xii. p. 462.*

Herbs or shrubs. Whorls few- or several-flowered, mostly in a terminal raceme.—A large and widely-dispersed genus, of which there are several Cape species.

## 14. BALLOTA, Linn.

Calyx funnel-shaped; tube 10-nerved, with 5–10 teeth, which are basally dilated or connate in an orbicular, spreading, equal or oblique limb. Corolla-tube subincluded, pilose-annulate within; limb 2-lipped, the upper lip erect, oblong, subconcave, emarginate; lower spreading, 3-lobed, the medial lobe emarginate. Stamens ascending under the upper lip; anthers exerted, approaching in pairs, 2-celled, the cells at last diva-

ricating. Style 2-fid ; lobes subulate. Nuts obtuse, not truncate.—*DC. Prod.* xii. p. 516.

Perennial herbs or undershrubs, generally coarsely scented. Leaves rugged, cordate at base, entire or crenate ; the floral similar. Whorls axillary.—*B. Africana*, Benth., common through the colony, is our only species.

### 15. *LEUCAS*, Benth.

Calyx tubular or narrow-bellshaped, striate, straight or incurved, the mouth equal or oblique, 8-10-toothed. Corolla-tube included, annulate or nude within ; limb 2-lipped, upper lip concave, erect, entire or emarginate, very hairy externally, lower longer, spreading, 3-fid, the medial lobe very large. Stamens ascending under the galea ; filaments nude ; anthers approaching in pairs, with divaricate cells. Upper lobe of style very short, lower subulate. Nuts 3-cornered, obtuse.—*DC. Prod.* xii. p. 523.

Herbs or undershrubs, often weeds in warm countries. Leaves subentire or toothed ; whorls axillary, few- or many-flowered. Corolla mostly white.—2 species naturalized near Natal.

### 16. *LASIOCORYS*, Benth.

Calyx somewhat bell-shaped, 10-nerved, with 5 ovate teeth, rarely with interposed toothlets. Corolla-tube included, annulate within ; limb 2-lipped ; upper lip entire, concave, erect, very hairy without ; lower spreading, scarcely longer, 3-fid, the medial lobe scarcely wider, emarginate. Stamens 4, ascending ; filaments nude ; anthers in pairs, under the upper lip, 2-celled ; cells divaricate. Style-lobes subulate, the lower short or very short. Nuts 3-cornered, obtuse.—*DC. Prod.* xii. p. 534.

African undershrubs, allied to *Ballota* and *Leucas*.—1 Cape species, in the Eastern district.

### 17. *LEONOTIS*, R. Br.

Calyx ovate-tubular, 10-nerved, incurved, with an oblique, 10-toothed mouth, the upper tooth larger. Corolla-tube exerted, nude or partly annulate within ; limb 2-lipped, upper lip concave, erect, elongate, entire, lower short, spreading, 3-fid, the medial lobe scarcely longer. Stamens under the galea ; filaments nude at base ; anthers in pairs, 2-celled, divaricate. Upper style-lobe very short. Nuts obtuse.—*DC. Prod.* xii. p. 534.

African herbs and halfshrubs, with bright scarlet or orange showy flowers, in very dense whorls ; leaves ovate or lanceolate, crenate.—8 Cape species, Eastern and at Natal.

18. **TEUCRIUM**, Linn.

Calyx tubular or bell-shaped, rarely inflated, 5-toothed, the teeth equal or the upper larger. Corolla-tube short, not ringed within, the 4 upper lobes subequal or unequal, either oblong and bent down or very short, erect, the lowest very large, often concave. Stamens 4, exserted between the upper lobes of corolla, the lower pair longer; anther-cells confluent. Style 2-fid. Nuts mostly roughly ridged, oblique at base.—*DC. Prod.* xii. p. 574.

A large and dispersed genus of herbs and shrubs.—3 Cape species, Eastern and at Natal.

19. **AJUGA**, Linn.

Calyx ovate or globose-bellshaped, subequal, 5-fid or 5-toothed. Corolla-tube included or exserted, mostly annulate within, straight or half-twisted; limb 2-lipped, the upper lip very short, slightly emarginate, lower elongate, spreading, 3-fid, the side-lobes oblong, the medial wider, emarginate or 2-fid. Stamens 4, ascending, mostly exserted, the lower pair longer; anthers with divaricating, at length confluent cells. Style subequally 2-fid.—*DC. Prod.* xii. p. 595.

Herbs of the Old World; but 1 Cape species (*A. Ophrydis*, Burch.), which is very common in the Eastern district. Whorls axillary, or the upper spiked. Flowers often blue.

ORDER XCVII. **NYCTAGINEÆ.**

Flowers often involucrate or bracteate. Calyx corolloid, tubular, bell-shaped or funnel-shaped, often constricted in the middle, subentire or toothed, the lower part becoming hardened, persistent, and enclosing the fruit, the upper mostly falling off. Stamens definite, hypogynous. Ovary 1-celled, free; ovules solitary, erect; style filiform. Fruit enclosed within the hardened base of the calyx. Embryo curved round the albumen; radicle inferior; cotyledons leafy.—Leaves mostly opposite.—Only 1 South African genus.

1. **BOERHAAVIA**, Linn.

Bracts mostly deciduous. Calyx jointed in the middle, the lower part cylindrical or obconic, persistent; the upper funnel- or bell-shaped, coloured, deciduous, shortly 5-lobed. Stamens 1, 2, 3, rarely 4, combined in a hypogynous ring, mostly exserted; anthers minute, roundish. Ovary minute; style as long as the stamens; stigma obtuse. Fruit enclosed

in the hardened, mostly 5-ribbed base of the calyx.—*DC. Prod.* xiii. p. 449.

Tropical weeds, erect or trailing. Leaves opposite, mostly petioled. Flowers in irregular glomerules, rarely umbelled, small.—*B. Burchellii*, Chois., occurs about Natal, etc.

## ORDER XCVIII. POLYGONEÆ.

Flowers bisexual or polygamous. Calyx herbaceous or corolloid, 3-6-parted, persistent, often enlarging with the fruit, imbricate in bud. Stamens perigynous, definite, in the bottom of the perianth; anthers 2-celled, splitting. Ovary 1-celled, free, compressed or triangular; ovule solitary, erect; styles 2-3, free or more or less connate. Fruit an achene (nut), rarely berry-like, more or less enclosed in the perianth. Seed erect, albuminous; radicle superior.—Herbs or shrubs, with swollen joints. Leaves alternate, their bases clasping or sheathing, very generally dilated into a perfect sheath (ocrea), which is membranous, truncate, entire or 2-fid, often ciliate at margin or torn. Flowers small.

Calyx corolloid, 5-fid; stamens 8; anthers versatile; stigmas capitate.

Nuts 3-winged or crested . . . . . 1. OXYGONUM.

Nuts not winged, compressed or 3-cornered . . . . . 4. POLYGONUM.

Calyx herbaceous, 6-fid; stamens 6; anthers basifixed; stigmas peneilled.

3 outer lobes of perianth in the fruit largest, spiniferous at the angles . . . . . 2. EMEX.

3 inner lobes of perianth largest, coloured or veiny; 3 outer smaller, not spinous . . . . . 3. RUMEX.

### 1. OXYGONUM, Burch.

Flowers bisexual. Calyx funnel-shaped, with a short ovoid tube constricted above the ovary; limb corolloid, 5-parted, spreading, the lobes equal, oblong, acute, marcescent. Stamens 8, in the throat, equal, exserted; anthers versatile. Ovary 3-cornered; styles 3, short, exserted, connate at base; stigmas capitate. Nut included in the calyx, with 3 membranous wings or suborbicular, emarginate at each end, the faces flat or furnished with a tooth expanding in a transverse line into a wing, the wings wider than the seeds, entire or apiculate in the middle.—*DC. Prod.* xiv. p. 38.

Herbs, with the habit of *Polygonum*. Leaves pinnatifid or entire. Racemes spike-like, terminal, leafless; bracts sheathing.—5 species, Eastern.

2. **EMEX**, Neck.

Flowers polygamo-monœcious.—Male: Calyx herbaceous, 5-6-parted, the lobes equal, spreading. Stamens 4-6; filaments short; anthers basifixed, oblong.—Fem.: Calyx herbaceous, 3-angled, funnel-shaped, 6-fid, enlarged and indurated in fruit, the 3 outer lobes continuous with the angles of the tube, spinescent and spreading, the 3 inner smaller, flat, erect. Styles 3; stigmas pencilled.—*DC. Prod.* xiv. p. 40.

Weed-like annuals, common to Southern Europe, Northern and Southern Africa, and Asia. Stems depressed, branched. Leaves petioled, deltoid-ovate, entire. Flowers green, in axillary, often racemose tufts.—1 species, common through the colony.

3. **RUMEX**, Linn.

Flowers bisexual, or polygamous or diœcious. Calyx herbaceous, deeply 6-parted, the lobes imbricate in 2 rows, those of each row subequal among themselves, those of the inner row enlarging and closely investing the fruit, coloured or veiny-membranous, 1 or more of them tubercled at base. Stamens 6; filaments short; anthers basifixed, oblong. Ovary 3-angled; styles 3, very short; stigma multifid.—*DC. Prod.* xiv. p. 41.

Herbs, rarely shrubs; many of them rank weeds, as the various kinds of Dock.—Several South African species, dispersed.

4. **POLYGONUM**, Linn.

Flowers bisexual. Calyx corolloid, 5-parted, the lobes subequal, entire, all similar, flat, or the outer 2-3-keeled or dorsally winged, at length closing round the nut. Stamens 8 (rarely 7-4), in the bottom of the perianth, often alternating with the scales of a perigynous ring; anthers versatile. Ovary compressed or 3-cornered; styles 2-3, sometimes connate; stigmas capitate. Nut not winged.—*DC. Prod.* xiv. p. 83.

A vast, cosmopolitan genus, of which there are several South African species.—Herbs erect, decumbent or twining. Ocreæ membranous, discoloured, cylindric, ciliate or nude or 2-partite or multifid, the floral mostly leafless. Leaves alternate, various. Flowers axillary, racemose, spiked or capitate.

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 ORDER XCIX. **PHYTOLACCEÆ**.

Flowers hermaphrodite, rarely diœcious. Perianth single, 4-5-parted; segments imbricate. Stamens hypogynous, inserted on a convex disk or at the base of a disk that lines the



bottom of the perianth, as many or twice as many as the perianth-segments or more numerous. Ovary of many 1-celled carpels, forming a whorl on the receptacle; styles attached to the inner face of the carpel, recurved, stigmatose on the inner face; ovules solitary, basifixed. Fruit of many free or connate drupes berries nuts or utricles. Seeds with usually copious floury albumen, round which the embryo is curved.—Herbs shrubs or trees. Leaves alternate, simple, entire. Stipules present or 0. Flowers usually spiked or racemose.

### 1. PHYTOLACCA, Linn.

Flowers 3-bracteate. Perianth herbaceous or petaloid, ascending or reflexed. Stamens 5–30, on a fleshy disk. Carpels 5–12, free or connate. Fruit of numerous small, fleshy drupes, together forming a berry.—*DC. Prod.* xiii. pt. 2. p. 31; *Pircunia*, p. 29.

Herbs shrubs or rarely trees, with spiciform racemes of greenish flowers. 1 species, native of the Orange and Caledon rivers.

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## ORDER C. CHENOPODIEÆ.

Calyx 5-(rarely 4–2-)parted or cleft, herbaceous, often changing in fruit, imbricate in bud. Stamens inserted in the base of the perianth, as many as its segments and opposite them, rarely fewer. Ovary single, free, or nearly so, 1-celled; ovule solitary, attached to the base of the cell, sessile or on a basal cord; styles 2–4, terminal, more or less united; stigmas divergent. Fruit with a membranous pericarp, enclosed in the more or less altered, persistent calyx. Seed horizontal or vertical, erect or inverted; embryo either curved round floury albumen, or, in the exalbuminous genera, spiral.—Herbs or halfshrubs, with (mostly) alternate, exstipulate leaves, and minute, green flowers. Many are found by the seashore or in salt ground, others by roadsides and in rubbish. None are poisonous. Many contain large quantities of carbonate of soda.

\* Stems not jointed, leafy; leaves expanded, petioled.

Flowers bisexual, ebracteate; ovary depressed; seed horizontal . . . . . 1. CHENOPODIUM.

Flowers monœcious or dioecious; the females bracteate; seed erect.

Female flowers with a minute, 3–5-parted calyx; fruit subglobose . . . . . 2. EXOMIS.

Female flower without calyx; fruit compressed.

Bracts in fruit dilated, appressed, erect . . . 3. ATRIPLEX.

- Bracts in fruit inflated, hard and corky . 4. OBIONE.
- \*\* Stems not jointed, leafy ; leaves linear or subterete, sessile.
- Lobes of the fruit-calyx dorsally winged.
- Flowers ebracteate ; styles 2, elongate-filiform . . . . . 5. KOCHIA.
- Flowers 2-bracteate ; style 1 ; stigmas 2 . 11. CAROXYLON:
- Lobes of the fruit-calyx not dorsally winged.
- Flowers axillary, solitary or in small glomerules.
- Styles 2, elongate ; ovary depressed-globose ; seed horizontal . . . . . 6. ECHINOPSIS.
- Styles 0 ; stigmas 3-5 ; ovary cylindrical, ovate, truncate ; seed vertical . . 10. SUEA.
- Flowers in slender, leafless spikes ; styles 4 ; nut 8-ribbed . . . . . 7. WALLINIA.
- \*\*\* Stems or branches jointed, succulent, leafless ; flowers partly concealed under the truncate apices of the upper joints.
- Fruit-calyx closed, minutely winged at apex . 8. SALICORNIA.
- Fruit-calyx open, inflated, not winged . . . 9. ARTHROCNEMUM.

SUBORDER 1. **Cyclolobææ.** Embryo annular. (Gen. 1-9.)

1. **CHENOPODIUM**, Linn.

Flowers bisexual, ebracteate. Calyx 5-fid or 5-parted, the segments concave, never appendicled. Stamens 5, rarely fewer, in the base of the perianth ; anthers ovate. Ovary depressed-globose ; styles 2 (rarely 3), united below, subulate. Fruit depressed, enclosed in the subglobose calyx. Seed horizontal, lenticular ; albumen central, copious ; embryo annular, coiled round the albumen.—*DC. Prod. xii. pt. 2. p. 61.*

Herbs, many of them weeds of cultivation, of the temperate zones. Leaves triangular-rhomboid, entire or toothed, often mealy. Flowers glomeruled, in panicles or spikes.—Several species.

2. **EXOMIS**, Moq.

Flowers either monœcious or bisexual. Male flowers and the bisexual ebracteate. Calyx 5-parted ; segments ovate, acute, concave. Stamens 5 ; anthers ovate.—Female 2-bracteate. Calyx 3-4-5-parted, sometimes 0 ; segments very minute, scarcely conspicuous. Styles 2, connate at base. Fruit subglobose, partly or quite enclosed in dilated or unchanged bracts ; pericarp adhering to the seed, thickish, fleshy. Seed vertical, lenticular ; embryo annular, peripheric.—*DC. Prod. xiii. pt. 2. p. 89.*

Shrubby, glaucous plants of salt ground. Leaves alternate, petioled, entire. Flowers terminal, in spikes, or axillary and glomerate.—2 species, Eastern.

3. **ATRIPLEX**, Gærtn.

Flowers monœcious or diœcious.—Males ebracteate. Calyx 3-5-parted, not appendicled. Stamens 3-5, hypogynous; anthers subrotund. Pistil rudimentary.—Female usually 2-bracteate, the bracts in fruit dilated, erect, appressed, distinct or united at base. Calyx 0. Staminodia and nectary 0. Styles 2, filiform, united at base. Fruit compressed, enclosed in the bracts; pericarp very thin, separate from the seed. Seed vertical, lenticular; embryo annular, peripheric.—*DC. Prod. xiii. pt. 2. p. 90.*

Herbs or shrubs of salt ground and waste places, throughout the temperate zones, often scurfy or mealy. Leaves alternate, petioled, mostly hastate or triangular, toothed or entire. Flowers crowded in glomeruled spikes.—Several species.

4. **OBIONE**, Gærtn.

Flowers monœcious or diœcious.—Males ebracteate. Calyx 4-5-parted, not appendicled. Stamens 4-5, hypogynous; anthers ovate.—Female 2-bracteate; bracts more or less united, at length inflated, hardened or corky, connivent. Calyx 0. Styles 2, setaceo-filiform, united below. Fruit compressed, enclosed in the capsule-like bracts; pericarp very thin, membranous. Seed vertical, ovate, beaked; embryo annular.—*DC. Prod. xiii. pt. 2. p. 106.*

Herbs or shrubs, mostly scaly, scurfy or mealy, of a pale or whitish colour. Leaves alternate or opposite, ovate or rhomboid, entire or denticled. Flowers crowded in glomerules. Chiefly known from *Atriplex* by its inflated bracts, and by habit.—*O. portulacoides*, a widely-dispersed species, occurs at the Cape.

5. **KOCHIA**, Moq.

Flowers bisexual or abortively female, ebracteate. Calyx urceolate, 5-fid, the lobes at length expanding dorsally in membranous, transverse wings. Stamens 5, mostly exserted, in the base of the calyx; anthers ovate. Ovary depressed-globose; styles 2, elongate-filiform, divaricate. Fruit depressed, enclosed in the ray-winged calyx; pericarp membranous. Seed horizontal; embryo annular.—*DC. Prod. xiii. pt. 2. p. 130.*

Villous or pubescent herbs or halfshrubs. Stems slender. Leaves alternate, sessile, terete or flat. Flowers axillary, solitary or few together, the female winged, the bisexual imperfectly so.—2 Cape species.

6. **ECHINOPSIS**, Moq.

Flowers bisexual or abortively female, ebracteate. Calyx urceolate, 5-fid, the lobes at length bearing dorsally 5 spine-like, spreading appendices (or sometimes minute tubercles). Sta-

mens 5, exserted, in the base of the calyx; anthers ovate. Styles 2, setaceous, much exserted, divaricate. Fruit as in *Kochia*.—*DC. Prod.* xiii. pt. 2. p. 134.

Pubescent, villous or silvery herbs or undershrubs. Leaves alternate, sessile, narrow-linear, flat or semiterete. Flowers axillary and terminal.—*E. diffusa* (*Chenolea diffusa*, Th.), our only species, is a decumbent, littoral plant, with silvery foliage and axillary flowers. Common on various parts of the coast.

### 7. WALLINIA, Moq.

Flowers bisexual, 3-bracted. Calyx deeply urceolate, 5-fid; segments herbaceous, entire, unchanged. Stamens 5, in the base of the calyx; filaments compressed; anthers sagittate. Ovary ovate; styles 4, short, approaching in pairs, linear-clavate. Fruit nut-like, ellipsoid, scarcely compressed, 8-ribbed, sitting on a callus, surrounded by the sepals; pericarp herbaceous, closely adhering to the seed. Testa of seed bony; embryo subannular.—*DC. Prod.* xiii. pt. 2. p. 143.

An erect, branching herb, with alternate, entire, glabrous, fleshy leaves. Flowers sessile, minute, glomerate, dispersed in dense, slender, simple, leafless spikes. Bracts membranous, acute, persistent.

### 8. SALICORNIA, Tourn.

Flowers bisexual or polygamous, not scaly, immersed in hollows of the axis of inflorescence. Calyx bag-like, toothed at margin, at length thickened, and furnished with a minute, transverse wing. Stamens 1-2, hypogynous. Ovary ovate; styles 2, subulate, connate at base. Fruit utricular, compressed, included in the closed, minutely-winged calyx; pericarp thin, hispidulous, adhering to the seed. Seed vertical; embryo conduplicate, thick, green; cotyledons dilated; albumen eccentric, small.—*DC. Prod.* xiii. pt. 2. p. 144.

Herbs or halfshrubs, growing in salt ground or by the muddy seashore, with jointed stems, leafless or minutely leafy, succulent and glabrous. Branches opposite. Joints truncate, the uppermost bearing flowers.—*S. herbacea* is common on the Cape flats, etc.

### 9. ARTHROCNUM, Moq.

Character of *Salicornia*, except: Calyx ventricose, truncate or 3-5-toothed, never appendicled. Fruit enclosed in the open, inflated, fleshy calyx; pericarp membranous, free from seed. Embryo half-annular, greenish; albumen central and lateral, copious or scanty.—*DC. Prod.* xiii. pt. 2. p. 150.

Plants, with the aspect of *Salicornia*.—*A. fruticosum*, Moq., grows abundantly at Hout Bay and other parts of the coast.

SUBORDER 2. **Spirolobeæ.** Embryo spiral. (Gen. 10-11.)10. **SUÆDA**, Moq.

Flowers mostly bisexual, bracteolate. Calyx urceolate, 5-parted; segments equal, thickish, fleshy, at length inflated and berry-like, sometimes dry and subcarinate (but never horned or winged). Stamens 5, hypogynous. Ovary cylindrical-ovate, truncate, sometimes with an annular disk; style 0; stigmas 3-5, compressed-lanceolate, papillose, divergent. Fruit utricular, compressed, in the closed calyx; pericarp very thin, filmy, free. Seed vertical; albumen 0 or scarcely any; embryo in a flat spiral, terete.—*DC. Prod.* xiii. *pt.* 2. *p.* 155.

Herbs or halfshrubs, of salt ground and seashores. Leaves alternate, sessile, subterete, fleshy. Flowers axillary, mostly glomerulate.—*S. indica*, Moq., occurs at the Cape.

11. **CAROXYLON**, Thunb.

Flowers bisexual, 2-bracteate. Calyx 5-parted, the segments at length dorsally-winged transversely, the apex erect or rarely, in fruit, reflexed. Stamens 5, hypogynous; filaments flat. Disk cup-like, sometimes crenate. Ovary depressed-globose; style long or short; stigmas 2, subulate or ovate, papillose above. Fruit utricular, depressed, enclosed in the hardened 5-rayed calyx; pericarp membranous. Seed horizontal, depressed-globose; albumen 0; embryo coiled up or conical-spiral, green.—*DC. Prod.* xiii. *pt.* 2. *p.* 172.

Herbs or undershrubs, glabrous or pubescent, rarely nearly leafless. Leaves alternate or opposite, sessile, subcylindrical, fleshy. Flowers axillary, sessile, solitary or subsolitary.—4 South African species; colonial name, "Canna-bosch."

ORDER CI. **AMARANTACEÆ.**

Calyx 3-5-parted or -cleft, dry and membranous, mostly coloured, persistent, imbricate in bud. Stamens as many as the segments, and opposite them, or fewer, with or without alternating barren stamens; anthers 2-1-celled. Ovary single, ovate, compressed, free, 1-celled, 1- or several-ovuled; ovules affixed to cords rising from the base of the cavity; style terminal, simple; stigma capitate, or 2-3 filiform stigmas. Fruit 1- or many-seeded, mostly enclosed in the unaltered calyx; pericarp membranous (very rarely juicy), indehiscent or circumscissile. Embryo curved round copious, floury albumen.—Herbs or undershrubs of the warmer zones. Leaves opposite or alternate, exstipulate, very rarely fleshy, mostly quite entire. Flowers small, capitate spiked or paniced.



Except by its membranous, not herbaceous calyx, this Order scarcely differs technically from *Chenopodiæ*, but in habit it differs widely.

Tribe 1. CELOSIEÆ. Anthers 2-celled. Ovary many-ovuled. Fruit many-seeded. (Gen. 1-2.)

Stamens without interposed staminodia . . . . 1. CELOSIA.

Stamens alternating with long, 2-fid staminodia . . 2. HERMBSTÆDTIA.

Tribe 2. ACHYRANTHEÆ. Anthers 2-celled. Ovary 1-ovuled. Fruit 1-seeded. (Gen. 3-10.)

Lateral abortive flowers 0.

Stamens free. Fruit splitting across . . . . 3. AMARANTUS.

Stamens united in a cup. Fruit indehiscent.

No staminodia.

Segments of calyx equal, subvillous, erect . . 4. PSILOTRICHUM.

Segments of calyx unequal, spreading, and plumose at apex . . . . . 5. TRICHINIUM.

Staminodia between the stamens.

Stigmas 2; staminodia triangular, entire . . 6. ÆRVA.

Stigma 1-capitate.

Segments of calyx subequal, villous; leaves, save the lowest, alternate . . . . . 7. SERICOCOMA.

Segments of calyx unequal, glabrous, hardening; leaves opposite . . . . . 8. ACHYRANTHES.

Lateral flowers abortive, changed into hooked bristles or spines.

Staminodia flat, toothed or lacerate, between the stamens . . . . . 9. CYATHULA.

Staminodia 0 . . . . . 10. PUPALIA.

Tribe 3. GOMPHIRENEÆ. Anthers 1-celled. Ovary 1-ovuled. (Gen. 11-12.)

Stamens united in a short cup at base; staminodia

minute, tooth-like . . . . . 11. ALTERNANTHERA.

Stamens united in a tube below; staminodia long,

tongue-like . . . . . 12. TELANTHERA.

## TRIBE 1. CELOSIEÆ. (Gen. 1-2.)

### 1. CELOSIA, Linn.

Flowers bisexual, 3-bracted, Calyx 5-parted, the segments equal, spreading, glabrous. Stamens 5, united in a cup; no staminodia; anthers 2-celled, oblong. Ovary many-ovuled; style long or short; stigmas 2-3, minute, recurved. Fruit many-seeded, splitting across the middle. Seeds vertical.—*DC. Prod.* xiii. *pt.* 2. *p.* 240.

Erect, glabrous herbs, with alternate, petioled leaves, and brightly shining, white or coloured flowers, crowded in spikes or panicles. The "Cock's-comb" is a garden example.—*C. trigyna*, a common African species, occurs at Natal.

## 2. HERMBSTÆDTIA, Reich.

Characters as in *Celosia*, except that elongate, 2-fid staminodia alternate with the perfect stamens, which are united at base into a short tube.—*DC. Prod. xiii. pt. 2. p. 246.*

South African undershrubs, erect, branching, glaucous. Leaves alternate. Flowers in long spikes or terminal heads; bracts coloured.—3 species, in Caffraria and at Natal.

## TRIBE 2. ACHYRANTHÆ. (Gen. 3-10.)

### 3. AMARANTUS, Tourn.

Flowers polygamo-monœcious, 3-bracted. Calyx 5- rarely 3-parted; segments equal, erect, glabrous. Stamens 5-3, free; filaments subulate; no staminodia; anthers 2-celled. Ovary 1-celled, 1-ovuled; style 0; stigmas 2-3, subulate, spreading. Fruit ovate, 2-3-beaked, splitting across the middle, 1-seeded. Seed vertical.—*DC. Prod. xiii. pt. 2. p. 255.*

Herbs, often weeds, throughout the tropics and warmer zones. Leaves alternate. Flowers small, purplish or green, in paniced spikes or glomerules.—*A. Thunbergii*, Moq., and *A. Blitum*, Linn., diffused.

### 4. PSILOTRICHUM, Bl.

Flowers bisexual, 3-bracted. Calyx 5-parted; segments subequal, erect, glabrous or villous. Stamens 5, in a short cup; filaments filiform; staminodia 0; anthers 2-celled. Ovary 1-celled, 1-ovuled; style long; stigma capitate. Fruit ovate, indehiscent, 1-seeded, quite hidden in the closed calyx.—*DC. Prod. xiii. pt. 2. p. 279.*

Herbs or undershrubs, pubescent or glabrous. Leaves opposite, petioled, entire. Flowers in terminal or axillary spikes.—1 tropical species, probably Eastern.

### 5. TRICHINIUM, R. Br.

Flowers bisexual, 3-bracted. Calyx 5-parted; segments subequal or unequal, erect, at length spreading at the tip, villous-plumose. Stamens 5, combined in a cup or tube; no staminodia; anthers 2-celled. Ovary 1-celled, 1-ovuled; style long; stigma capitate. Fruit obovate or ovate, valveless, 1-seeded, enclosed in the connivent base of the plumose-tipped calyx.—*DC. Prod. xiii. pt. 2. p. 297.*

Herbs or undershrubs, chiefly Australian, many of great beauty.—*T. Zeyheri*, Moq., our only species, has tufted or opposite, narrow linear, glabrous, pale green leaves, and pale brown flowers, with white, silky long hairs.

### 6. ÆRVA, Forsk.

Flowers bisexual, 3-bracted. Calyx 5-parted, the segments equal, erect, woolly. Stamens 5, united in a cup at base;

filaments subulate ; staminodia toothed or subulate-triangular ; anthers 2-celled. Ovary 1-ovuled ; style short ; stigmas 2, minute, rarely elongate. Fruit roundish, valveless, 1-seeded, enclosed in the calyx.—*DC. Prod.* xiii. *pt.* 2. *p.* 299.

More or less white-tomentose herbs or halfshrubs, with alternate or opposite leaves, and minute flowers in terminal and axillary, dense, short spikes.—2 South African species, besides the common *Æ. lanata*.

### 7. SERICOCOMA, Fenzl.

Flowers bisexual, solitary or 2-3 together, the solitary or medial flowers 3-bracted, the others 2-bracted. Calyx 5-parted ; segments equal or unequal, mostly pointless, villous externally ; the two outer ones sometimes longer and spinous. Stamens 5, united in a cup ; filaments filiform ; staminodia small, scale-like, flat, entire or ciliolate. Ovary 1-ovuled ; style simple, straight or oblique ; stigmas capitate. Fruit ovoid or obovoid, valveless, 1-seeded, enclosed in the calyx.—*DC. Prod.* xiii. *pt.* 2. *p.* 306.

Annual or perennial herbs. Leaves alternate, the lowest sometimes opposite. Flowers in cylindrical or capitate, terminal spikes, spreading after flowering.—6 species, dispersed.

### 8. ACHYRANTHES, Linn.

Flowers bisexual, 3-bracted. Calyx 5-4-parted ; segments subequal, erect, mostly glabrous, at length hardened. Stamens 5-4, united in a cup ; filaments narrow ; staminodia 5, flat or concave, toothed or lacerate at apex, rarely entire, sometimes produced into a dorsal, erect, toothed or fringed appendix ; anthers 2-celled. Ovary 1-ovuled ; style longish ; stigmas capitate. Fruit 1-seeded, valveless, enclosed in the calyx.—*DC. Prod.* xiii. *pt.* 2. *p.* 309.

Herbs or undershrubs, of warm countries. Leaves opposite. Flowers spreading, glabrous, in slender or ovate spikes, rarely in heads. Bracts subulate, very acute, mostly glabrous.—4 Cape species.

### 9. CYATHULA, Lour.

Flowers bisexual, 3-bracted, subternate ; the medial fertile, the lateral sterile and changing into hooked bristles. Calyx 5-parted ; segments subequal, erect, hispid. Stamens 5, united in a cup ; filaments subulate-linear ; staminodia 5, flat, toothed or lacerate at apex, sometimes 2-fid, and sometimes produced at back into an erect, slender, 2-fid appendage ; anthers 2-celled. Ovary 1-ovuled ; style longish ; stigma capitate. Fruit oblong, valveless, 1-seeded, enclosed in the calyx.—*DC. Prod.* xiii. *pt.* 2. *p.* 325.

Herbs or undershrubs, of warm countries. Leaves opposite, rarely tufted. Flowers in terminal spikes or heads, at length subreflexed.—3 Cape species.

### 10. PUPALIA, Juss.

Flowers bisexual, 3-bracted, ternate; the medial fertile, lateral changed into hooked bristles or sharp spines. Calyx 5-parted; segments subequal, erect, pilose. Stamens 5, united in a very short cup; filaments subulate; staminodia 0; anthers 2-celled. Ovary 1-ovuled; style filiform; stigma capitate. Fruit as in *Cyathula*.—*DC. Prod.* xiii. pt. 2. p. 331.

Undershrubs, of warm countries. Branches and leaves opposite, rarely alternate or fascicled. Flowers glomerate, erect, at length spreading, forming interrupted spikes.—3 or 4 South African species.

### TRIBE 3. GOMPHRENEÆ. (Gen. 11–12.)

#### 11. ALTERNANTHERA, Forsk.

Flowers bisexual, rarely polygamo-diœcious, 3-bracted. Calyx 5-parted; segments equal or unequal, erect, glabrous or villous. Stamens 5, united in a cup at base; filaments filiform; staminodia very minute, tooth-like, entire; anthers 1-celled. Ovary 1-ovuled; style short; stigma capitate or 2-lobed. Fruit valveless, 1-seeded, more or less enclosed in the calyx.—*DC. Prod.* xiii. pt. 2. p. 350.

Much-branched herbs, of warm countries, mostly villous. Leaves opposite. Flowers in terminal or axillary heads.—1 or 2 species at the Cape.

#### 12. TELANTHERA, R. Br.

Flowers bisexual, 3-bracted. Calyx 5-parted; segments equal or unequal, erect, glabrous or villous. Stamens 5, united in a tube below; filaments filiform; staminodia elongate, tongue-shaped, toothed at the apex; anthers 1-celled. Ovary 1-ovuled; style short; stigma capitate. Fruit valveless, 1-seeded, enclosed in the calyx.—*DC. Prod.* xiii. p. 362.

Herbs or undershrubs, chiefly American and tropical. Leaves opposite. Flowers in terminal or axillary heads.—*T. maritima*, a common plant of West Tropical Africa, is stated by Sparmann to be South African also.

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## ORDER CII. PARONYCHIEÆ.

Flowers usually hermaphrodite. Perianth of 4–5 segments, imbricate, free or connate at the base. Petals 5 in *Corrigiola*. Stamens usually as many as the perianth-segments, sometimes with alternating staminodia, hypogynous or perigynous; filaments free or connate at the base; anthers usually short. Ovary sessile, free, ovoid or 3-gonous, 1-celled;

style 1, terminal, seldom 2-3, 2-fid, rarely 3-fid, stigmatose on the inner face; ovule 1 (rarely 2), erect or pendulous from a basal funicle. Fruit a minute 1-seeded nut or utricle, enclosed in the calyx. Seed erect or inverted, with farinaceous albumen and a lateral or central, straight or curved embryo.—Herbs, sometimes shrubby at the base. Leaves usually opposite and quite entire, stipulate, in *Scleranthus* connate at base, serrulate and exstipulate. Flowers small, solitary or in cymes.

Leaves opposite or alternate, stipulate. Style 1, simple or 2-3-fid.

Perianth of 5 obtuse lobes. Petals 0. Leaves opposite . . . . . 1. *HERNIARIA*.

Perianth urceolate, with 5 aristate lobes. Leaves subverticillate . . . . . 2. *POLLICHIA*.

Perianth 5-parted. Petals 5. Leaves alternate . . . . . 3. *CORRIGIOLA*.

Leaves opposite, connate at the base, exstipulate. Styles 2.

Calyx hardening . . . . . 4. *SCLERANTHUS*.

### 1. *HERNIARIA*, Linn.

Flowers hermaphrodite or unisexual. Calyx 4-5-fid; segments equal or unequal, obtuse. Petals as many, very minute, or 0. Stamens 3-5, perigynous. Ovary ovoid, 1-celled; style short, 2-fid or 2-parted; ovule erect. Utricle membranous, enclosed in the calyx.—*DC. Prod. iii. p. 367*.

Diffuse herbs. Leaves opposite or alternate, often crowded. Stipules scarious. Flowers minute, green, axillary.—1 species, also European and Asiatic, diffused.

### 2. *POLLICHIA*, Soland.

Flowers surrounded at the base by at length somewhat fleshy bracts. Calyx urceolate, 5-6-lobed; lobes small, mucronate, at length fleshy; mouth closed with a thickened lobed disk. Petals 0, or minute. Stamens 1-2, on the throat of the perianth. Ovary ovoid, 1-celled, narrowed into a filiform, twisted style, with 2-fid stigma; ovules 2, basilar. Utricle globose, included in the perianth-tube, 1-seeded.—*DC. Prod. iii. p. 377*.

A diffuse herb. Leaves subwhorled, narrow. Stipules scarious. Flowers minute, axillary, crowded.—1 species, found in the Eastern districts; extends to Arabia. Fruit eaten by the Hottentots.

### 3. *CORRIGIOLA*, Linn.

Calyx herbaceous, deeply 5-fid; lobes obtuse. Petals 5, perigynous, as long as the calyx. Stamens 5, perigynous. Ovary 1-celled; style very short; ovule 1, suspended from a basilar funicle. Nut crustaceous, ovoid, turgid, 3-angled, enclosed in the rugulose calyx.—*DC. Prod. iii. p. 366*.



Diffuse herbs. Leaves alternate, rather fleshy and glaucous. Stipules scarious. Flowers small, cymose corymbose or paniced.—1 diffused European species, probably introduced.

#### 4. **SCLERANTHUS**, Linn.

Perianth funnel-shaped or tubular, at length indurate; lobes 4-5, erect or incurved. Stamens 1, 2, 5, or 10, inserted on the throat of the calyx. Ovary ovoid; styles 2, distinct, filiform; stigmas capitate; ovule 1, suspended from a basilar funicle. Utricle included in the thickened perianth-tube.—*DC. Prod.* iii. p. 378.

Small, rigid herbs, densely tufted. Leaves opposite, connate at the base, subulate. Stipules 0. Flowers very small, green.—2 species, both European and perhaps introduced.

### ORDER CIII. **PENÆACEÆ**.

Calyx coloured, persistent, enlarging, tubular, 4-lobed; the lobes valvate or reduplicate in bud. Stamens 4, in the throat, alternate with the lobes of the perianth; anthers adnate to a thickened connective, 2-celled. Ovary free, 4-celled; cells 2-4-ovuled; style terete or 4-cornered; stigma 4-lobed or 4 stigmas. Capsule loculicidal, 4-valved. Seed exalbuminous; embryo fleshy, with minute, scarcely-visible cotyledons.—Shrubs or undershrubs, with opposite, entire leaves, and subsessile, mostly bracteolate flowers in the upper axils.

Tribe 1. **PENÆEÆ**. Ovules in each cell 2, erect. (Gen. 1-4.)

Style 4-angled or 4-winged; stigmas 4, flat, placed crosswise.

Style 4-winged . . . . . 1. **PENÆA**.

Style 4-angled (not winged) . . . . . 2. **STYLAPTERUS**.

Style terete; stigma 4-lobed, capitate.

Calyx-tube not longer than the lobes. Stamens included . . . . . 3. **BRACHYSIPHON**.

Calyx-tube longer than the lobes. Stamens exserted . . . . . 4. **SARCOCOLLA**.

Tribe 2. **ENDONEMEÆ**. Ovules in each cell 4, 2 ascending, 2 pendulous. (Gen. 5-6.)

Calyx-tube 4-ribbed, scarcely longer than lobes.

Flowers crowded in a terminal, bracteate spike . . . . . 5. **GLISCHROCOLLA**.

Calyx-tube long, cylindrical. Flowers axillary, scattered . . . . . 6. **ENDONEMA**.

#### TRIBE 1. **PENÆEÆ**. (Gen. 1-4.)

##### 1. **PENÆA**, Linn.

Calyx-tube scarcely longer than the limb, about equalling the bract, valvate in bud. Filaments very short; anther-cells

much shorter than the thickened connective, 2-valved, the margins of the valves ciliate. Ovary smooth; cells 2-ovuled at base; stigmas 4, flattened, cruciate, each decurrent as a band along the (thus 4-winged) style. Capsule covered with the enlarged calyx, 4-celled, 4-valved. Seeds erect.—*DC. Prod.* xiv. p. 484.

Branching shrublets. Leaves flat, the uppermost suddenly passing into broader, coloured bracts. Bracteoles very minute, in pairs. Flowers in the upper axils, coloured.—6 species, dispersed.

## 2. STYLAPTERUS, A. Juss.

Characters as in *Penæa*, except: Ovary roughish; style 4-sided (but not 4-winged). Capsule in the torn calyx, more or less nude, the bracts and bracteoles deciduous.—*DC. Prod.* xiv. p. 486.

Shrublets, with flat or acerose heathlike leaves. Flowers in the upper axils and very caducous, thin, often ciliate; bracts and bracteoles sometimes wanting altogether?—3 species.

## 3. BRACHYSIPHON, A. Juss.

Calyx-tube oblong; lobes about as long, valvate or reduplicate-valvate in bud. Filaments very short; anther-cells shorter than the thick connective, the valves entire. Ovary smooth, oblong; style filiform, terete; stigma small, 4-lobed.—*DC. Prod.* xiv. p. 487.

Shrublets, with flat or rarely acicular leaves, and flowers in the upper axils.—6 species.

## 4. SARCOCOLLA, Kth.

Calyx-tube oblong; lobes shorter than the tube, reduplicate-valvate in bud. Stamens exerted; anthers equalling the filaments, the cells nearly equalling the connective, the valves entire. Ovary smooth; cells 2-ovuled; style slender, terete; stigma capitate, 4-lobed.—*DC. Prod.* xiv. p. 488.

Shrublets, with flat, imbricated leaves, and ample, coloured, often resinous bracts, and flowers crowded at the tops of the branches.—4 species, Western.

## TRIBE 2. ENDONEMÆ. (Gen. 5-6.)

## 5. GLISCHROCOLLA, A. DC.

Calyx-tube oblong, 4-ribbed; lobes rather shorter than the tube, reduplicate-valvate in bud. Filaments short, thick; anthers cordate-ovate; cells oblong, longer than the warted connective, introrse. Ovary smooth, 4-celled, each cell 4-ovuled; the ovules in pairs, 2 upper ascending, 2 lower pen-

dulous; style filiform; stigma obsoletely 4-lobed.—*DC. Prod. xiv. p. 490.*

A shrublet, with ovate-imbricate leaves,  $1-1\frac{3}{4}$  inch long,  $\frac{1}{2}-1$  wide, margined, with a prominent nerve beneath. Flowers crowded at the ends of the branches, with large, coloured, but not glutinous bracts.

#### 6. ENDONEMA, A. Juss.

Calyx with a long, cylindrical tube; lobes shorter, ovate, acute, thickened within, valvate in bud. Filaments erect, as long as the anthers or longer; anthers ovate; cells scarcely shorter than the connective, entire, margined. Ovary smooth; ovules 4 in each cell, 2 erect, 2 pendulous; style slender, equalling the calyx-tube; stigmas 4, small. Capsule oblong, 4-valved.—*DC. Prod. xiv. p. 490.*

Shrubs, with solitary flowers, in the axils of coloured leaves.—2 species.

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### ORDER CIV. GEISSOLOMEÆ.

[The genus *Geissoloma*, formerly referred to *Penæaceæ*, differs in having imbricate æstivation of the perianth; in the number and insertion of stamens, the versatile anthers, and albuminous seeds.]

#### 1. GEISSOLOMA, Lindl.

Calyx 4-parted, subtended by 2-fariously imbricated, scaly bracts, persistent; segments ovate, mucronate, imbricate in bud. Stamens 8, in the bottom of the perianth, the 4 alternating with the lobes rather shorter than the others; anthers much shorter than the filaments, ovoid, 2-lobed at base, versatile, mucronulate, with an obsolete connective. Ovary free, 4-lobed, 4-celled; ovules in each cell 2, pendulous; styles 4, at first cohering as 1, then separating; stigmas minute. Capsule 4-celled, loculicida. Seeds solitary, pendulous; albumen copious, fleshy; embryo about as long, central, with linear, fleshy cotyledons and a short radicle.—*DC. Prod. xiv. p. 492.*

A shrub, with opposite, ovate-subcordate, entire, margined leaves, and axillary, solitary, bracteate flowers. Perianth and bracts membranous, nerved.—Clanwilliam and Swellendam.

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### ORDER CV. THYMELEÆ.

Flowers bisexual. Calyx corolloid or rarely herbaceous, tubular, deciduous or persistent, 4-5-lobed, the lobes imbricate in bud. Hypogynous scales 4-8, minute, free or united in a cup, rarely perigynous, sometimes wanting. Fertile sta-

mens 2-4-5, 1-seriate, opposite the lobes, or 8-10, 2-seriate, inserted on the perianth; anthers 2-celled. Ovary free, 1-celled (rarely 2-celled); ovule 1, pendulous; style filiform. Fruit a nut or drupe. Seed solitary; albumen 0 or thin; radicle superior.—Shrubs or rarely trees, with very tough bark; simple, quite entire leaves, without stipules; and capitate, umbelled, racemose or spiked, rarely solitary, often pubescent flowers.

Tribe 1. DAPHNEÆ. Calyx without any scales or glands in the throat or within the tube.

Flowers pedicelled, in pedunculate, terminal umbels . . . 1. PEDDIEA.

Flowers sessile, either in heads or spikes or axillary.

Anthers subsessile within the throat of perianth . . . 3. ARTHROSOLEN.

Anthers on setaceous or subulate filaments, some or all exserted.

Flowers in terminal, peduncled, involucred heads . . . 2. DAIS.

Flowers axillary or spiked.

Nut dry, with a hard shell . . . . . 4. PASSERINA.

Berry fleshy, containing a hard seed . . . . . 5. CHYMOCOCCA.

Tribe 2. GNIDIEÆ. Calyx having scales or glands, either in the throat or more or less within the tube.

Glands more or less concealed in the tube. Anthers on conspicuous filaments.

Glands oblong, in the middle of the tube. Flowers subsolitary . . . . . 7. CRYPTADENIA.

Glands filiform or scale-like, in the upper part of tube, partly hidden among the hairs of throat.

Flowers mostly capitate . . . . . 8. LACHNEA.

Glands or scales at the summit of the tube, conspicuous. Anthers subsessile.

Calyx with a 4-parted limb.

Stamens 4 . . . . . 6. STRUTHIOLA.

Stamens 8 . . . . . 9. GNIDIA.

Calyx with 5-parted limb. Anthers 10 . . . . . 10. LASIOSIPHON.

## TRIBE 1. DAPHNEÆ. (Gen. 1-5.)

### 1. PEDDIEA, Harv.

Calyx coloured, deciduous, the tube conical-cylindrical, continuous; limb 4-5-lobed; lobes short, revolute. Stamens 8-10, inserted above the middle of the tube, 2-seriate; anthers subsessile, oblong, obtuse. A cup-like, membranous, crenate disk under the ovary. Ovary 1-celled, 1-ovuled; ovule pendulous; style filiform, deciduous; stigma depressed-capitate. Drupe nude. Embryo exalbuminous.—*DC. Prod. xiv. p. 528.*

*P. Africana* is a glabrous shrub, with forking branches, scattered or sub-opposite, obovate-oblong, shining leaves, and umbellate, pedunculate flowers.—Found near Natal.

2. **DAIS**, Linn.

Calyx coloured, funnel-shaped, the tube slender, continuous or at length bursting across above the ovary, pubescent within; limb 5-lobed, regular; throat without scales. Stamens 10, inserted in the throat in a double row; filaments conspicuous, setaceous, the alternate shorter, the upper row or all exserted; anthers oblong. A membranous cup beneath the ovary. Style lateral, capillary, exserted; stigma capitate. Berry fleshy or dry, enclosed in the base of the calyx.—*DC. Prod.* xiv. p. 528.

Shrubs, with scattered or opposite, large, flat, veiny leaves, and terminal peduncled heads, girt with a 4-leaved involucre.—*D. cotinifolia*, the only South African species, grows in the Eastern district and at Natal.

3. **ARTHROSOLEN**, C. A. Mey.

Calyx coloured, funnel-shaped, the tube jointed below the middle, the upper part deciduous, lower persistent; limb 4-5-parted, spreading; throat without scales. Stamens 8-10, in the throat; anthers subsessile, oblong or linear, 2-seriate, the upper half exserted, lower included. No hypogynous scales. Style lateral, filiform, included; stigma papillate, capitate. Nut enclosed in the persistent base of the perianth.—*DC. Prod.* xiv. p. 559.

Shrubs or undershrubs, with scattered or rarely opposite, sessile leaves, and axillary or capitate and involucre flowers.—9 species, dispersed.

4. **PASSERINA**, Linn.

Calyx salver-shaped, the tube mediocre, thin, narrowed and at length bursting above the ovary, the lower part persistent, enwrapping the fruit, or at length splitting and falling off; limb 4-parted, petaloid, spreading; throat without scales. Stamens 8, 1-seriate in the throat; filaments subulate, exserted, dilated at base. No hypogynous scales. Style lateral, near the apex of the glabrous ovary, equalling the tube of perianth; stigma half-exserted, capitate. Nut enclosed in the calyx-tube or at last nude, ovate, with a hard, dry shell.—*DC. Prod.* xiv. p. 561.

Heath-like shrubs, with tomentose branches, and decussately opposite, small, dorsally-keeled or convex, narrow leaves; flowers small, axillary or in terminal spikes, each subtended by a dilated bract.—4 species, dispersed.

5. **CHYMOCOCCA**, Meisn.

Character as in *Passerina*, except that the fruit is a fleshy, nude berry, containing a hard-shelled seed.—*DC. Prod.* xiv. p. 565.

1 or 2 species, with the habit of *Passerina*, dispersed.



## TRIBE 2. GNIDIEÆ. (Gen. 6-10.)

## 6. STRUTHIOLA, Linn.

Calyx 2-bracteolate, coloured, with a long, slender, cylindrical tube, jointed and deciduous above the ovary, the throat widened; limb 4-parted; lobes equal, spreading. Glands 8 or 12 or rarely 4, fleshy or horny, oblong, erect, exserted on the rim of the throat, each girt with a circle of shining hairs, and all of them more or less confluent at base. Anthers 4, subsessile in the throat, included. No hypogynous scales. Ovary sessile; style lateral, capillary, equalling the calyx-tube; stigma capitate. Nut enclosed in the persistent base of perianth.—*DC. Prod.* xiv. p. 566.

Heath-like shrubs or undershrubs, mostly with long, slender branches, opposite or rarely scattered, mostly linear leaves and flowers, in terminal leafy spikes, often very-sweetly scented.—19 species, dispersed.

## 7. CRYPTADENIA, Meisn.

Calyx coloured, funnel-shaped; the tube jointed over the ovary, the upper part deciduous; the throat pubescent, without scales; limb 4-parted; the lobes as long as the tube or longer, spreading, glabrous within. Glands 8, oblong, sessile, sub-1-seriate, in the middle of the tube. Stamens 8, 2-seriate, inserted above the glands; filaments capillary, bearded. No hypogynous scales. Ovary glabrous; style lateral, equalling the tube; stigma capitate. Nut in the hairy base of calyx.—*DC. Prod.* xiv. p. 573.

Heath-like shrublets or undershrubs, with opposite, decussate, sessile, linear or needle-shaped, glabrous leaves, and terminal, subsolitary, purplish or rosy, externally silky flowers.—5 species, Western.

## 8. LACHNÆA, V. Royen.

Calyx coloured, funnel-shaped, pubescent within and without (very rarely glabrous within), the tube narrowed and at length jointed and deciduous above the ovary; limb 4-parted, spreading; the lobes equal or unequal in pairs. Glands 8, in a double or single row beneath the insertion of the stamens, included or half-exserted, filiform or scale-like, partly hid among the hairs of the throat. Stamens 8, 2-seriate, exserted, inserted in the throat; filaments conspicuous; anthers basifixed, obtuse. No hypogynous scales. Ovary sessile, glabrous; style lateral, capillary; stigma capitate, exserted. Nut ovoid, in the base of calyx.—*DC. Prod.* xiv. p. 574.

Shrubs with slender branches, opposite or scattered leaves, and flowers in terminal, nude or involucre heads, rarely axillary, subsolitary.—18 species, dispersed.

## 9. GNIDIA, Linn.

Calyx coloured, funnel-shaped; tube jointed, deciduous above the ovary; limb 4-parted, regular. Glands or scales 4 or 8, inserted on the rim of the throat, exserted, petaloid or fleshy, 2-lobed or entire, glabrous or rarely tomentose. Anthers 8, subsessile in the throat, the upper ones half-exserted. Hypogynous ring obsolete or small. Ovary sessile; style lateral, equalling the tube; stigma capitate. Nut in the base of calyx.—*DC. Prod.* xiv. p. 580.

Heath-like shrubs or undershrubs (rarely with broad leaves), with capitate or spiked, rarely solitary and axillary, often involucre flowers.—41 species, dispersed.

## 10. LASIOSIPHON, Fresen.

Character as *Gnidia*, except: Calyx with a 5-parted limb. Scales 5, petaloid, glabrous, entire or 2-fid. Anthers 10.—*DC. Prod.* xiv. p. 593.

Shrubs with the habit of *Gnidia*, with terminal, often peduncled, involucre heads of flowers seated on a villous, convex receptacle. Base of perianth very hairy with long hairs; tube pubescent, glabrous within.—12 South African species, mostly Eastern.

## ORDER CVI. LAURINEÆ.

Flowers bisexual or unisexual, small. Calyx mostly free, herbaceous or petaloid, usually 6-fid (rarely 4–9), the lobes imbricating in 2 rows. Stamens perigynous, definite, in 3–4 rows, some (or all in the female flower) changed into glands scales or petaloid membranes (staminodia), those of the outer rows introrse, of the inner extrorse; anthers adnate, 2–4-celled, opening by valves. Ovary single, usually free, 1-celled; ovule solitary, pendulous; style simple. Fruit fleshy or dry, nude or enclosed in the enlarged calyx-tube. Seed exalbuminous.—Chiefly tropical trees or shrubs, abundant in Asia and America, very rare in Africa. Leaves simple, mostly undivided and very entire, densely netted with veinlets, rigid, without stipules.

Suborder 1. **Laureæ.** Forest trees or shrubs.

Anthers 2-celled. Fruit enclosed in the calyx-tube . . . 1. CRYPTOCARIA.  
Anthers 4-celled. Fruit sitting in the cup-like base of  
calyx . . . . . 2. OREODAPHNE.

Suborder 2. **Cassytheæ.** Leafless, filiform, twining parasites.

Character the same as that of the Suborder . . . 3. CASSYTHA.

1. **CRYPTOCARYA**, R. Br.

Flowers bisexual, paniced, bracteate. Calyx funnel-shaped, 6-fid, the tube urceolate, persistent, enlarging, somewhat narrow in the throat, the lobes equal or subequal, at length deciduous. Fertile stamens 9, in the throat; filaments short, flat, the 3 innermost with a sessile gland at each side at base; anthers ovate-oblong, 2-celled, the 3 inner extrorse. Staminodia 3, shortly stipitate, ovate-oblong, acute, without glands. Style filiform, short; stigma subcapitate. Ovary completely immersed in the calyx-tube. Fruit hidden in the fleshy or dry, enlarged calyx-tube.—*DC. Prod.* xv. p. 68.

Trees of both hemispheres, with alternate leaves and axillary or terminal, short panicles of flowers.—2 South African species.

2. **OREODAPHNE**, Nees.

Flowers mostly diœcious, paniced or racemose, nude. Calyx rotate or funnel-shaped, 6-parted, the lobes equal or subequal, deciduous. Fertile stamens 9 (in the female changed into glands or scales); filaments short, the 3 inner with basal glands; anthers ovate or oblong, 4-celled, the cells superposed, 3 inner extrorse; staminodia 0 or obsolete. Berry sitting in the short, cup-like base of calyx.—*DC. Prod.* xv. p. 111.

Trees, chiefly American. *O. bullata*, Nees, which yields the well-known "Stinkwood" of cabinet makers, is the only Cape species.

3. **CASSYTHA**, Linn.

Flowers bisexual. Calyx urceolate or at first rotate, 6-fid, persistent, the 3 outer lobes smaller, the tube at length globose and fleshy. Fertile stamens 9, in the throat; filaments short, broad; anthers 2-celled, the 3 inner extrorse, with glands at base, alternating with 3 triangular or gland-like staminodia. Ovary enclosed in the calyx-tube, free; style short; stigma depressed. Fruit enclosed in the fleshy calyx-tube.—*DC. Prod.* xv. p. 252.

Leafless, cord-like parasites, scrambling over bushes, etc., like *Cuscuta*, and similarly attached by lateral disks. Flowers capitate, spiked or racemose, each 3-bracted at base.—2 Cape species, of which *C. Capensis* is common throughout the colony.

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 ORDER CVII. **PROTEACEÆ**.

Calyx 4-cleft or 4-parted; lobes valvate in bud. Stamens perigynous, 4 (1 sometimes sterile), opposite the lobes of the perianth; anthers 2-celled, splitting. Ovary free, sessile or stalked, 1-celled; ovules solitary or in pairs (or numerous in

2 rows); style simple, terminal; stigma terminal or lateral. Fruit (in the African genera) a 1-seeded nut or drupe. Albumen 0.—Trees, shrubs or undershrubs, very varied in aspect, with rigid, exstipulate, entire or multifid, alternate, rarely opposite or whorled leaves. Flowers either capitate, spiked or axillary, rarely umbelled. The species are chiefly natives of the Western districts.

Flowers diœcious (male and female on different plants).

Male flowers racemose; nuts exserted, bearded . . . 1. AULAX.

Male flowers capitate; nuts glabrous, hidden under the broad scales of a cone-like involucre . . . 2. LEUCADENDRON.

Flowers bisexual and fertile or rarely polygamous in the same inflorescence.

Flowers in many-flowered or indefinitely few-flowered, terminal or axillary heads.

Calyx irregular, 2-labiate, 3 lacinia (or all) cohering.

Antheriferous apices of calyx cohering; nuts bearded, tailed by the persistent style . . . 3. PROTEA.

Antheriferous apices separate; nuts smooth, not tailed . . . 4. LEUCOSPERMUM.

Calyx distinctly 4-cleft, regular.

Nut sessile, smooth; leaves flat, expanded, entire or toothed . . . 5. MIMETES.

Nut pedicellate, hairy or glabrescent; leaves filiform, 3-pinnatifid or rarely entire . . . 6. SERRURIA.

Flowers in 1-flowered or definitely 2-6-flowered involucre heads, which are congested in terminal spikes or head-like glomerules.

Calyx regular; stigma vertical, clavate.

Nut sessile, entire at base; leaves flat, the upper entire or cut, lower pinnatifid . . . 7. NIVENIA.

Nut pedicellate or emarginate at base; leaves linear, entire or some of the lower decom-pound . . . 8. SOROCEPHALUS.

Calyx irregular, 1 segment larger; stigma oblique, dilated . . . 9. SPATALLA.

Flowers in spikes or racemes (not capitate).

Anthers sessile in the apices of the calyx-lobes; nut bearded; spikes terminal; leaves alternate, quite entire . . . 10. FAUREA.

Anthers on short filaments at the base of the 4-parted calyx; drupe velvety; racemes axillary; leaves whorled, serrated . . . 11. BRABEUM.

### 1. AULAX, Berg.

Flowers diœcious, the male in racemes, nude; female capitate, bracteate. Calyx regular, 4-parted; segments, in the males, bearing anthers in the middle. Hypogynous scales in male 0, in female 4. Ovary 1-ovuled; stigma oblique, clavate, hispidulous, emarginate. Nut exserted, ventricose, bearded.—*DC. Prod.* xiv. p. 211.

Glabrous, low shrubs, the flowering branches umbellate. Leaves narrow, sessile, quite entire.—2 species, Western.

## 2. LEUCADENDRON, Herm.

Flowers diœcious, both sexes in involucred heads, the female involucre cone-like. Calyx regular; segments bearing anthers in the concave apex. Stigma oblique, clavate, hispidulous, emarginate. Nut sometimes winged, enclosed within the scales of the cone-like involucre.—*DC. Prod.* xiv. p. 212.

Trees or shrubs, silky, silvery, pubescent or glabrous. Leaves quite entire, mostly sessile. Heads terminal, solitary.—49 species, dispersed.

## 3. PROTEA, Linn.

Flowers bisexual, capitate, the head many-flowered, involucred with persistent, coriaceous, imbricate often-coloured bracts; receptacle flat or convex, mostly glabrous. Calyx elongate, slender, 2-labiate, 3 of its lobes cohering in one lip and mostly aristate, the fourth free; anthers sessile in the spoon-like apices of the perianth-lobes, linear, the connective mostly crested. Style subulate, persistent; stigma cylindrical or subulate. Nut tailed by the style, rigidly hairy all over.—*DC. Prod.* xiv. p. 230.

Shrubs or small trees. Leaves quite entire, flat or channelled, often margined. Heads large, mostly terminal.—60 species, dispersed.

## 4. LEUCOSPERMUM, R. Br.

Flowers bisexual, capitate, the head terminal, many-flowered, globose or oblong: receptacle flattish, paleaceous; involucre multiseriate, the bracteoles imbricated, appressed. Calyx 1-labiate, (3 or rarely all) of the claws of the segments cohering, their spoon-shaped apices separate, antheriferous. Style filiform, deciduous; stigma glabrous, mostly much thickened, sometimes obliquely truncate, very generally angular or furrowed. Nut crustaceous, sessile, subglobose, smooth.—*DC. Prod.* xiv. p. 253.

Small trees or generally low shrubs, erect or trailing, with sessile, flat or concave, entire or callous-denticulate leaves and mostly terminal heads of yellow flowers.—23 Cape species, dispersed.

## 5. MIMETES, Salisb.

Flowers bisexual, capitate, the head axillary, rarely terminal, few- or many-flowered, sometimes wrapped in a concave leaf; receptacle flat, with narrow, deciduous paleæ or 0; involucre many-leaved, membranous, rarely coriaceous, often coloured, multiseriate, imbricate or 1-sided. Calyx regular, 4-parted, the segments distinct, antheriferous in the apices. 4 hypo-



gynous scales. Style filiform, deciduous; stigma subulate, slender. Nut sessile, ventricose, smooth.—*DC. Prod.* xiv. p. 262.

Shrubs, with the habit of *Leucospermum*, but mostly axillary heads of red or purple (not yellow) flowers. Leaves flat or concave, entire or callous-dentate, mostly veiny and pubescent.—Heads in the axils of the upper leaves or terminal.—14 species, dispersed.

#### 6. SERRURIA, Salisb.

Flowers bisexual, capitate; the head globose, indefinitely many-flowered, involucred or nude; involucre multiseriate, persistent, the scales membranous, imbricate. Calyx subregular, 4-fid, the claws distinct, apices concave, antheriferous. Hypogynous scales 4. Style filiform, deciduous; stigma vertical, glabrous, clavate or cylindrical, mostly furrowed. Nut on a short stipe, ovoid or ventricose, hairy or glabrescent. sometimes beaked with the style-base.—*DC. Prod.* xiv. p. 283.

Small shrubs, with terete-filiform, 3-fido-pinnatifid, rarely undivided leaves, and purple flowers in solitary, corymbose or glomerated heads.—52 species, dispersed.

#### 7. NIVENIA, R. Br.

Flowers bisexual, capitate; the heads 4-flowered, involucred, disposed in dense, terminal spikes or rarely in a glomerule, each head subtended by a bract; involucre 4-leaved, persistent, hardened in fruit; receptacle nude. Calyx regular, 4-fid, entirely deciduous; the apices concave, antheriferous. Hypogynous scales 4. Style filiform, deciduous, angle-furrowed above; stigma vertical, clavate, obtuse, rarely conic-capitate. Nut sessile, ventricose, shining, entire at base.—*DC. Prod.* xiv. p. 299.

Erect, virgate shrubs, with dimorphous leaves, the upper more or less entire, dilated and flat, the lower pinnatifid or 2-3-ternate. Flowers purple.—13 species, dispersed.

#### 8. SOROCEPHALUS, R. Br.

Flowers bisexual, capitate, heads 6-1-flowered, involucred, crowded in a dense terminal head-like spike; involucre 3-6-leaved, subtended by a bract, not changed in fruit; receptacle nude. Calyx regular, 4-fid, quite deciduous; the apices concave, antheriferous. Hypogynous scales 4. Style filiform, deciduous; stigma vertical, clavate. Nut on a short stipe or emarginate at base, ventricose.—*DC. Prod.* xiv. p. 303.

Erect, virgate shrubs, with narrow-linear, flat or filiform, entire leaves, or the lower leaves sometimes 2-pinnatifid. Flowers purplish.—11 species, dispersed.

9. **SPATALLA**, Salisb.

Flowers bisexual, capitate; heads 4-1-flowered, involucred, spiked or racemose, each subtended by a bract; involucre 4-leaved, not changed in fruit; receptacle nude. Calyx subirregular, 4-fid, quite deciduous; the apices concave, antheriferous, the inner segment mostly largest. Hypogynous scales 4, subulate. Style filiform, deciduous; stigma oblique, dilated, concave or subconvex. Nut on a short stipe, ventricose.—*DC. Prod.* xiv. p. 306.

Heath-like shrubs, with filiform, undivided leaves. Flowers purplish.

10. **FAUREA**, Harv.

Flowers bisexual, regular, spiked. Calyx clavate-tubular, equal, cleft below by the bursting forth of the style, 1-labiate, reflexed, at length quite deciduous; the apices long, cohering, concave, antheriferous. Hypogynous scales 4, free, membranous, acute. Ovary sessile, densely silky; style filiform, straight, glabrous; stigma subclavate, 4-furrowed, obtuse, obscurely nodulose at base. Nut sessile, ovate, clothed with long, straight hairs, tailed by the (at length deciduous) style.—*DC. Prod.* xiv. p. 344.

Shrubs or small trees, with simple, quite entire, vertical leaves, and subsessile, densely-flowered, terminal spikes.—2 species, natives of the Natal country.

11. **BRABEIUM**, Linn.

Flowers polygamous (commonly male, with a barren pistil), regular, spiked. Calyx 4-leaved, regular, deciduous. Stamens 4, with short filaments, attached to the base of the perianth segments. Hypogynous scales connate in a tube. Ovary sessile; style filiform; stigma vertical, clavate. Drupe dry, subglobose or elliptical, subcompressed, villous, with a bony stone.—*DC. Prod.* xiv. p. 344.

A tree, with whorled, simple, serrate leaves, and axillary, spiked racemes of white, sweet-scented flowers. Colonial name, "Wild Castanjes," or Caffre Chestnut.—Native of the Western districts.

ORDER CVIII. **SANTALACEÆ**.

Perianth-tube adhering to the ovary; limb superior, 4-5-rarely 3-fid; the lobes valvate in bud. Stamens 4-5, opposite the lobes of the perianth, inserted at their base. Ovary inferior, 1-celled; ovules 2-4; pendulous from near the apex of a central, cord-like placenta; style simple; stigma often lobed. Fruit nut-like or drupaceous. Seed solitary, with fleshy albu-

men and axile embryo.—Trees, shrubs, undershrubs or herbs, often having parasitical attachment to the roots of other plants. Leaves simple, opposite or alternate, exstipulate, often glaucous. Flowers small, greenish, white or pale-yellow.

Calyx not prolonged as a tube above the ovary. (Large shrubs, with opposite leaves.)

Calyx 4-lobed; lobes deciduous in fruit . . . . 1. OSYRIS.

Calyx 5-lobed; lobes persistent in fruit . . . . 2. RHOIACARPUS.

Calyx sensibly prolonged as a tube above the ovary.

(Small shrubs or herbs, with alternate, often minute leaves.)

Flowers bisexual; calyx 5-lobed.

Fruit a thin-shelled, fleshy drupe . . . . 3. OSYRIDOCARPUS.

Fruit a dry, hard-shelled, ribbed nut . . . . 4. THESIUM.

Flowers diœcious; calyx 4-lobed; leaves small or

scale-like . . . . . 5. THESIDIUM.

### 1. OSYRIS, Linn.

Flowers bisexual (or diœcious). Tube of the calyx slender in the males; in the females or hermaphrodite obconic; limb deeply 3-4-lobed; lobes ovate, acute, with or without a few deciduous hairs on the surface. Stamens 3-4; filaments short; anthers 2-celled. Disk concave, with round lobes, covering the upper and undivided part of perianth. Ovary fleshy; style short; stigmas 3-4. Drupe ovoid-globose, crowned with broken vestiges of the limb and disk.—*DC. Prod.* xiv. p. 632.

Shrubs or trees, chiefly of the Northern hemisphere.—*O. compressa*, A. DC. (*Fusanus compressus*, Lam.), our only species, is a common, glaucous shrub, with opposite leaves, very variable in shape.

### 2. RHOIACARPUS, A. DC.

Flowers bisexual, 5- rarely 6-fid; tube narrow-obconic; lobes ovate, acute, persistent, with a tuft of hairs on the surface. Stamens with slender filaments and 2-celled anthers. Disk subconcave, with very obtuse, short lobes. Style cylindrical-conical; stigmas 5, short. Ovary fleshy. Drupe ovoid, crowned with the persistent limb of the calyx.—*DC. Prod.* xiv. p. 634.

A shrub, with the habit of *Osyris compressa*, from which it is known by the persistent, 5-fid limb of perianth.—Eastern districts.

### 3. OSYRIDOCARPUS, A. DC.

Flowers bisexual. Calyx obconical at base, and there adhering to the ovary, prolonged upwards into a cylindrical-funnel-shaped tube, 5-lobed at apex, a tuft of hairs on the middle of each lobe. Stamens 5, inserted beneath the lobes near the apex of tube; filaments slender, equalling the 2-

celled anthers. Disk spread thinly over the tube, inconspicuous. Style elongate, obtuse or sub-3-lobed. Drupe ellipsoid, crowned by the (finally deciduous) limb of calyx.—*DC. Prod.* xiv. *p.* 635 ; *Thes. Cap. t.* 199.

Slender shrubs, scrambling or half-climbing through larger shrubs ; the branches pendulous. Leaves alternate, lanceolate or ovate-lanceolate. Flowers axillary, 1-3 together.—1 Eastern district and Natal species, another in Abyssinia.

#### 4. **THESIUM**, Linn.

Flowers bisexual. Calyx prolonged above the ovary, the free part salver-, funnel-, or bell-shaped ; 5-(rarely 4-)lobed, persistent or at length deciduous ; lobes mostly with a tuft of hairs, rarely glabrous. Stamens at the base of each lobe ; filaments linear. Disk mostly indistinct. Style reaching the stamens or much shorter ; stigma obtuse or capitate. Nut ellipsoid, dry, mostly crowned by the persistent limb of calyx, nerve-ribbed.—*DC. Prod.* xiv. *p.* 637.

Herbs or small shrubs, widely dispersed in the Eastern hemisphere. Leaves alternate, mostly narrow and glabrous, rarely expanded. Flowers commonly cymose, sometimes capitate, spiked paniced or dispersed.—62 species at the Cape, from various parts of the colony.

#### 5. **THESIDIUM**, Sond.

Flowers diœcious. Calyx above the ovary bell-shaped or subrotate, 4-(rarely 5-)fid, glabrous, except a tuft of hairs in the male flowers towards the anthers. Males: Stamens at base of each lobe ; filaments slender. Females: Style short ; stigma obscurely 3-lobed. Nut as in *Thesium*.—*DC. Prod.* xiv. *p.* 673.

Annuals or small undershrubs. Leaves alternate, minute, often scale-like. Flowers axillary, sessile or subsessile, mostly solitary, in lax spikes.—6 species, dispersed.

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### ORDER CIX. **EUPHORBIACEÆ.**

Flowers unisexual. Calyx free, 4-6-cleft or -parted, valvate or imbricate, rarely 2- or many-leaved or 0. Petals usually 0, when present alternating with the calyx-lobes, short and scale-like or well developed.—Male flowers: Stamens definite or indefinite, free or monadelphous ; anthers 2-celled.—Female flowers: Ovary sessile or stipitate, 2-3- or many-celled, the margins of the valves inflexed and adnate to a central column ; ovules solitary or in pairs, pendulous ; styles as many as the carpels, free or variously united or obsolete ; stigmas united or distinct. Fruit (very rarely fleshy) of 2-3 or more (usually

3) cocci, which generally split into 2 valves, and break off from a central, persistent columnar axis. Seeds albuminous; embryo central; cotyledons usually flat or flattish, sometimes leafy.—Trees shrubs and herbs, very varied in habit, frequently with an acrid, milky juice. Leaves mostly alternate, with or without stipules.

Series 1. UNIOVULATE. Ovules 1 in each cell.

Several monandrous male flowers and a solitary female together in a calyx-like, fleshy, 4–5-lobed involucre (milky plants) . . . . . 1. EUPHORBIA.

Male and female flowers separate.

Male flowers (at least) furnished with petals.

Stamens united in a central column.

Stamens 10; petals longer than the calyx . . . 3. JATROPHA.

Stamens 5; petals short . . . . . 4. CLUYTIA.

Stamens free.

Calyx 5-parted; petals 5, clawed . . . . . 5. CROTON.

Calyx 2-parted, sepals horned; petals 2 . . . 6. CERATOPHORUS.

Male flowers without petals.

Stamens many or very many (at least 50).

Stamens polyadelphous; filaments much-branched. . . . . 2. RICINUS.

Stamens monadelphous; flowers clustered within two large leafy-veined bracts . . . 13. DALECHAMPIA.

Stamens free; flowers not bracted.

Calyx of both sexes 3–4-parted; sepals entire . . . . . 14. CLAOXYLON.

Calyx of male 5-parted; of female 6–7-parted; the sepals pectinate-pinnatifid . 15. CTENOMERIA.

Stamens few, never more than 20.

Ovary 2-celled; capsule 2-coccous.

Trees or shrubs, with long-petioled, roundish leaves . . . . . 7. MAPPA.

Herbs, with narrow, subsessile leaves . . . 11. SEIDELIA.

Ovary 3–4-celled; capsules 3–4-coccous.

Stamens 2–3.

Male-calyx 3-parted; female 3–8-parted, the segments pectinate-pinnatifid (twining, hairy halfshrubs) . . . . . 10. TRAGIA.

Male-calyx cup-like, crenulate; female 3-toothed (trees and shrubs, with milky juice) . . . . . 16. STILLINGIA.

Stamens 8–16.

Styles 3, divergent, coloured, multifid . . . 8. ACALYPHA.

Styles 3, deeply 2-fid . . . . . 9. ADENOCLINE.

Style 1, short and thick; stigma 3–4-lobed . . . . . 12. PLUKENETIA.

Series 2. BIOVULATE. Ovules in pairs in each cell.

Flowers furnished with petals.

Calyx 5-fid; the lobes thick, triangular, valvate in bud . . . . . 19. BRIEDELIA.

Calyx 5-parted; sepals villous, imbricate in bud . 23. LACHNOSTYLES.



Flowers destitute of petals.

Stamens free.

Fruit fleshy, indehiscent, 2-3-celled . . . 17. *CYCLOSTEMON*.

Capsule 3-4-celled, falling asunder.

Dicœcious: Males in racemes; females on

few-flowered peduncles . . . 18. *HYÆNANCHE*.

Monœcious: Males tufted; females solitary . . . 21. *PLEIOSTEMON*.

Drupe fleshy, 1-celled, 1-seeded . . . 20. *ANTIDESMA*.

Stamens 3-5, united in a column, surrounded by

glands . . . 22. *PHYLLANTHUS*.

### SERIES 1. UNIOVULATE. (Gen. 1-16.)

#### 1. *EUPHORBIA*, Linn.

Flowers monœcious, several monandrous, nude, male flowers (or stamens), surrounding a single female flower (or stipitate pistil), within a calyx-like, cup-shaped, 4-5-lobed, fleshy involucre (or calyx).—Males: True calyx and corolla 0. Stamen jointed to a pedicel.—Female: Flowers on a lengthening pedicel. Calyx minute or obsolete, beneath the ovary. Ovary 3-celled; cells 1-ovuled; styles 3, 2-fid. Capsules 3-coccous; cocci elastically 2-valve.—*Endl. Gen.* 5766; *Baill. Euph. p.* 281, *t.* 1 and 2, *f.* 1-14; *DC. Prod.* xv. *pt.* 2. *p.* 7.

A vast genus of milky-juiced plants; annuals, perennials or succulent leafless shrubs or trees. Many of the latter are South African, inhabiting dry or rocky situations throughout the colony.

#### 2. *RICINUS*, Linn.

Flowers monœcious.—Male: Calyx 5-parted, valvate in bud. Stamens very many; filaments much-branched, polyadelphous.—Female: Calyx as in male. Ovary globose, 3-celled, cells 1-ovuled; style short; stigmas 3, 2-parted, plumose. Capsules 3-coccous, echinate or smooth.—*Endl. Gen.* 5809; *Baill. Euph. p.* 289. *t.* 10 and 11. *f.* 1-5; *DC. Prod.* xv. *pt.* 2. *p.* 1016.

*R. communis*, Linn., the Castor-oil plant, is commonly grown and partly naturalized throughout the colony.

#### 3. *JATROPHA*, Kth.

Flowers monœcious.—Male: Calyx 5-parted; lobes gland-edged, convolute in bud. Petals 5, longer than the calyx-lobes, alternating with 5 glands, twisted in bud. Stamens 10, those opposite the calyx-lobes stronger; filaments united in a central column.—Female: Ovary girt by 5 glands, 3-celled, cells 1-ovuled; styles 3, separate; stigmas peltate. Capsules 3-celled.—*Endl. Gen.* 5805; *Baill. Euph. p.* 294. *t.* 14. *f.* 10-27; *DC. Prod.* xv. *pt.* 2. *p.* 1076.

Shrubs or herbs, with milky juice. Leaves entire or lobed, often 2-glandular at base, and stipulate.—*Croton Capense*, Th., a shrub of the Eastern district, belongs to this genus, and there are 3 or 4 small, half-woody species in the Natal country.

4. **CLUYTIA**, Ait.

Flowers diœcious.—Male: Calyx 5-parted, imbricate. Petals 5, short, perigynous, alternating with as many 2-3-fid glands. Stamens 5, on a central column, supporting an abortive pistil.—Female: Calyx and corolla as in male. Ovary 3-celled; cells 1-ovuled; styles 3, 2-fid. Capsule coccous.—*Endl. Gen. n.* 5840; *Baill. Euph. p.* 328. *t.* 16. *f.* 1-21; *DC. l. c. p.* 1043.

South African shrubs or halfshrubs, with alternate, exstipulate, undivided leaves. Inflorescence axillary; flowers small, green, solitary or tufted.—Several species, dispersed.

5. **CROTON**, Linn.

Flowers monœcious or diœcious.—Male: Calyx 5-fid or -parted, imbricate or valvate in bud. Petals 5, clawed, pubescent, alternating with as many glands. Stamens 6-10-20-30; filaments free, on a convex receptacle.—Female: Calyx of male. Petals minute or 0. Disk of 5 glands. Ovary 3-celled; cells 1-ovuled; styles 3, 2-fid. Capsule 3-coccous.—*Endl. Gen. n.* 5827; *Baill. Euph. p.* 349. *t.* 17 and 18; *DC. l. c. p.* 512.

Shrubs or herbs, tropical and subtropical.—2 or 3 Cape species, in the Eastern district and Natal.

6. **CERATOPHORUS**, Sond.

Flowers diœcious.—Male: Calyx 2-leaved, the folioles ovate, cucullate, horned. Petals 2, alternate, elliptical or roundish, concave. Stamens 12-14; filaments free, equal, on the torus; anthers oblong.—Female: Calyx and corolla of male. Ovary 3-celled; styles 3, short, 2-fid, recurved. Capsule 3-angled, glabrous, 3-celled; cells 1-seeded.—*Sond. in Linn. xxiii. p.* 120; *Baill. Euph. p.* 392; *DC. l. c. p.* 1129 (*Gelonium*).

*C. Africanus*, Sond., the only species, is a tree, with opposite, obovate, glabrous, crenate-dentate leaves, and greenish, axillary flowers; the males tufted, the female solitary.—It is found in the Eastern district and all Natal.

7. **MAPPA**, A. Juss.

Flowers diœcious or monœcious.—Male: Calyx 2-3-(or 5-) parted, valvate in bud. Corolla 0. Stamens 2-12; filaments free or united at base; anthers globose.—Female: Calyx circling the base of ovary like a cup, the margin irregularly 2-3-fid or entire. Corolla 0. Ovary compressed, 2-celled, pubescent or echinate; cells 1-ovuled; style 2-parted, the branches long, divergent, reflexed, plumose within. Capsule 2-celled, bristly or smooth.—*Endl. Gen. n.* 5788; *Baill. Euph. p.* 428. *t.* 20. *f.* 1-7; *DC. l. c. p.* 991 (*Macaranga*, *sect.* 3, *Mappa*).

Trees or shrubs, with alternate, long-petioled, roundish or peltate leaves of large size, deciduous stipules, and axillary, simple or branched, bracteate

spikes of flowers ; male flowers tufted ; female solitary, in the axil of the bract.—*M. Capensis*, E. M., found by Drège, at Natal.

### 8. ACALYPHA, Linn.

Flowers monœcious or diœcious.—Male : Calyx 4-parted, valvate in bud. Stamens 8–16 ; filaments connate at their thickened bases ; anthers oblong, flexuous.—Female : Calyx 3–5-parted, pubescent, imbricate in bud. Ovary 3-celled ; cells 1-ovuled ; styles 3, divergent, coloured, multifiid. Capsule 3-celled, in the persistent calyx.—*Endl. Gen. n.* 5787 ; *Baill. Euph. p.* 440. *t.* 20. *f.* 13–19 ; *DC. l. c. p.* 799.

Tropical or subtropical shrubs or herbs, with the aspect of nettles ; alternate, penninerved leaves, with deciduous stipules, and terminal or axillary-spiked flowers ; the males aggregated, the female solitary under each bract.—Several Cape species, in the Eastern district and at Natal.

### 9. ADENOCLINE, Turcz.

Flowers diœcious.—Male : Calyx 5-parted ; the segments long, narrow, concave. Stamens 10–12 ; filaments free, short, jointed in the middle ; anthers didymous. Glands 3, on the receptacle.—Female : Calyx of male. Glands 3, broad, alternating with the cells of the 3-celled ovary ; cells 1-ovuled ; styles 3, deeply 2-fid. Capsule 3-celled.—*Turcz. in Fl.* 1844, *p.* 121 ; *Baill. l. c. p.* 456. *t.* 9. *f.* 6. *Diplostylis*, *Sond. in Linn.* xxiii. *p.* 113 ; *DC. l. c. p.* 1139.

Small half-woody or herbaceous plants, with opposite or alternate, stipulate, narrow, entire or toothed leaves, and axillary or terminal tufted flowers.—5 species, dispersed.

### 10. TRAGIA, Plum.

Flowers monœcious.—Male : Calyx 3-parted, valvate in bud. Stamens 2–3 ; filaments short, free.—Female : Calyx 3–8-parted ; the segments imbricated, pectinate or pinnatifid. Ovary 3-celled, 3-lobed ; cells 1-ovuled ; style 3-fid. Capsule hispid, 3-celled.—*Endl. Gen. n.* 5782 ; *Baill. l. c. p.* 459 ; *DC. l. c. p.* 927.

Herbaceous or ligneous tropical or subtropical plants, often voluble, hairy, with alternate, stipuled, penninerved, ovate or cordate, lobed or pinnatisect leaves and racemose flowers ; the female flowers few, at the base of the raceme, on long pedicels.—Several species, in the Eastern district.

### 11. SEIDELIA, Baill.

Flowers monœcious.—Male : Calyx 3-parted, valvate in bud. Stamens 2–3, alternate with the calyx-lobes ; filaments free ; anthers globose.—Female : Calyx 3-parted. Ovary 2-celled, a gland alternating with each cell ; cells 1-ovuled.—*Baill. l. c. p.* 465. *t.* 9. *f.* 7. *Mercurialis* sp., *Sond. in Linn.* xxiii. *p.* 112 ; *DC. l. c. p.* 947 (*Tragia*, *sect.* 11, *Seidelia*).

Small glabrous herbs, with simple, alternate, narrow, minutely-stipuled leaves and axillary flowers.—2 species.

## 12. PLUKENETIA, Linn.

Flowers monœcious.—Male: Calyx 4-5-parted, valvate in bud. Disk of 4-5 glands, alternate with the sepals. Stamens 8-10; filaments more or less connate at base, on a raised receptacle, free above. A rudimentary pistil.—Female: Calyx 4-5-parted, imbricate. Ovary 3-4-celled; cells 1-ovuled; style thick, short; stigma 3-4-lobed. Capsule 3-4-celled.—*Sond. in Linn. l. c. p. 110. Sajorium, Baill. l. c. p. 480. t. 21. f. 3-4. Plukenetia and Anabæna, Endl. 5784-5785; DC. l. c. p. 768.*

Twining undershrubs, with alternate, petioled, stipuled, penninerved, netted, toothed leaves, and axillary, racemose flowers.—*P. Africana*, *Sond.*, found at Magalisberg.

## 13. DALECHAMPIA, Plum.

Flowers monœcious, the male and female together, within a 2-leaved involucre.—Male: Calyx 4-5-parted, valvate in bud. Stamens indefinite; filaments united in a long or short column.—Female: Calyx 6-parted in 2 rows, imbricate in bud, or 5-parted, quincuncial; sepals narrow, entire or laciniated, often enlarging and growing rigid. Ovary 3-angled, 3-celled; cells 1-ovuled; style simple, oblong-clavate; stigma capitate. Capsule 3-celled, in the persistent calyx.—*Endl. Gen. n. 5768; Baill. l. c. p. 485. t. 3. f. 16-13 and t. 4. f. 1-5; DC. l. c. p. 1234.*

Twining or climbing undershrubs, with long-petioled, alternate, entire or 3-5-lobed or -parted leaves and axillary peduncles, the involucreal leaves becoming membranous and veiny.—*D. Capensis*, *Zey.*, common in the Eastern district and at Natal.

## 14. CLAOXYLON, A. Juss.

Flowers diœcious.—Male: Calyx 3-4-parted, valvate in bud. Stamens very many, on a hemispherical torus; filaments free; anther-cells distinct, erect on the apex of the filament.—Female: Calyx as the male. Disk of 3, fleshy, coloured glands, alternate with the sepals. Ovary 3-angled, 3-celled; style 3-parted, the arms reflexed, plumose within. Capsule 3-celled.—*Endl. Gen. 5790; Baill. l. c. p. 491. t. 20. f. 20-24; DC. l. c. p. 775.*

Tropical and subtropical trees and shrubs, with red colouring matter in the veins of the leaves, etc.—*C. Capense*, *Baill. (Acalypha, Drège, n. 4636)* is our only species.

## 15. CTENOMERIA, Harv.

Flowers monœcious.—Male: Calyx 5-parted; segments veiny, valvate in bud. Stamens 50-60, on a prominent torus; filaments free, capillary; anthers linear, rigid, basifixed.—Female: Calyx 6-7-parted; the segments pectinate-pinnatifid.

Ovary hairy, 3-celled; cells 1-ovuled; styles 3, long, filiform, densely papillose. Capsule 3-coccous, enclosed in the enlarged, persistent calyx.—*Harv. in Hook. Lond. Journ. Bot. i. p. 29*; *Baill. Euph. p. 494*; *DC. l. c. p. 925* (Leptorhachis).

Half-herbaceous, voluble plants, with alternate, petioled and stipuled, cordate, penninerved leaves and racemose inflorescence, terminal or opposite the leaves.—1 or 2 species, natives of Eastern district and Natal. They have the habit of *Tragia*, but differ in the male flowers.

## 16. STILLINGIA, Gard.

Flowers monœcious.—Male: Calyx cup-shaped, crenulate or shortly 2-3-fid. Stamens 2-3, exserted; filaments more or less connate at base.—Female: Calyx 3-toothed. Ovary sessile, 3-celled; cells 1-ovuled; style thick, with 3 reflexed branches. Capsule 3-coccous, nude.—*Endl. Gen. 5780*; *Baill. Euph. p. 509*. Spirostachys, *Sond. in Linn. xxiii. p. 107*. Sclerocroton, *Hochst. in Flora, 1845, p. 85*; *DC. l. c. p. 1155*.

Tropical and subtropical trees and shrubs, with milky juice; alternate, stipuled, entire or serrulate leaves, and terminal, racemose or spiked inflorescence, the males occupying the upper part of the spike, the females 1 or 2, on longish pedicels near the base.—2 or 3 species, at Natal.

## SERIES 2. BIOVULATE. (Gen. 17-23.)

### 17. CYCLOSTEMON, Blume.

Flowers diœcious.—Male: Calyx 4-5-parted; the sepals unequal, concave, imbricate in bud. Stamens very many; filaments slender, free, inserted round a broad, convex disk; anthers oblong.—Female: Calyx as in the male, persistent. Disk fleshy, surrounding the ovary. Ovary depressed, velvety, 3-(or 2-)celled; ovules in pairs; style 3-parted (or 2-parted), the branches thick, spreading, flattened and capitate at the apex. Fruit fleshy, indehiscent, 3-(or 2-)celled.—*Endl. Gen. n. 5837*; *Baill. Euph. p. 561. t. 23. f. 22-25*; *Harv. Thes. t. 200*; *DC. l. c. p. 480*.

Nearly glabrous trees, natives of tropical Asia, with entire or toothed, penninerved, shining leaves, and axillary or lateral inflorescence, both sexes in tufts.—*C. Natalense*, Harv., our only species, differs from the Indian species in having a trilocular ovary. Its yellow flowers are very fetid.

### 18. HYÆNANCHE, Lamb.

Flowers diœcious.—Male: Calyx 5-8-parted, imbricate in bud. Stamens 8-30; filaments short, free; anthers ovoid, extrorse.—Female: Calyx 3-5-7- or multi-parted; sepals imbricate, deciduous. Ovary 3-4-celled; cells 2-ovuled; style 3-4-parted, branches reflexed. Capsule woody, 3-4-celled.—*Endl. Gen. n. 5876*; *Baill. l. c. 565. t. 23. f. 29-39*; *DC. l. c. p. 479*.



*H. globosa*, Lamb, is a shrub or small tree, with corky branches, opposite or subverticillate, entire, thick, penninerved leaves, and axillary inflorescence; the females on short, few-flowered peduncles; the males in longer, dense racemes. Nuts very poisonous. Native of the Western districts.

### 19. BRIEDELIA, Willd.

Flowers monœcious.—Male: Calyx 5-fid; the lobes thick, triangular, valvate in bud. Petals 5, alternating with the calyx-lobes, perigynous, small, oval or spatulate, imbricate in bud. Disk of 5, rigid, pubescent lamellæ, opposite the calyx-lobes. Stamens 5, united in a central column, at the summit of which is a rudimentary pistil.—Female: Calyx and corolla as in the male. Ovary immersed in a 5-fid disk, 2-3-celled; cells 2-ovuled; style 2-3-parted, the branches 2-fid. Fruit fleshy, 2-3-celled, in the persistent calyx.—*Endl. Gen. n.* 5839; *Baill. Euph. p.* 582. *t.* 25. *f.* 25-34; *DC. l. c. p.* 492.

Trees or shrubs of the Old World, sometimes scandent. Leaves alternate, entire or toothed, short-petioled, stipuled, penninerved. Flowers in axillary tufts, small.—*B. micrantha*, Pl., occurs at Natal.

### 20. ANTIDESMA, Burm.

Flowers diœcious.—Male: Calyx 3-6-cleft or -parted, imbricate in bud. Disk annular, 3-6-lobed. Stamens 2-6, opposite the calyx-lobes; filaments filiform; anthers 2-celled, the cells widely spreading. A rudimentary pistil.—Female: Calyx of male. Ovary 1-celled, on a fleshy disk; ovules 2; stigma subsessile, 3-5-rayed. Drupe fleshy or dry, 1-seeded, crowned with the style.—*Endl. Gen. n.* 1892; *Baill. Euph. p.* 601; *Harv. Thes. t.* 169; *DC. l. c. p.* 247.

Trees or shrubs of warm latitudes in the Old World. Leaves alternate, simple, entire, stipuled. Inflorescence terminal or axillary, in spikes or glomerules.—*A. venosum* is found at Natal.

### 21. PLEIOSTEMON, Sond.

Flowers monœcious.—Male: Calyx 5-6-parted, in 2 rows, imbricate in bud. Stamens 6-8-10; filaments free, on a convex, glandular receptacle; anthers extrorse.—Female: Calyx as in the male. Ovary on a glandular disk, 3-celled; cells 2-ovuled; style 3-parted, the branches 2-fid. Capsule 3-celled.—*Sond. in Linn. xxiii. p.* 135; *Baill. l. c. p.* 615; *DC. l. c. p.* 333 (*Phyllanthus*, *sect.* 20, *Pleiostemon*).

*P. verrucosum*, Sond., the only species, is a shrub, with warted branches, alternate, oval, obtuse, glabrous, finely-netted, veined and penninerved leaves, and axillary flowers; the males tufted, females solitary.—Eastern district.

### 22. PHYLLANTHUS, Sw.

Flowers monœcious or diœcious.—Male: Calyx 5-6-parted,

in 2 rows. Stamens 3, rarely 5; filaments united in a central column, surrounded by 5-6 glands on a lobed disk; anthers extrorse.—Female: Calyx as in the male. Ovary on a glandular disk, 3-celled; cells 2-ovuled; style 3-parted, the branches 2-fid or repeatedly forked. Capsule 3-coccous.—*Endl. Gen. n.* 5847; *Baill. l. c. p.* 621; *DC. l. c. p.* 274.

Trees shrubs or herbs of both hemispheres. Leaves alternate, penninerved, netted, often distichous. Some are leafless, with flattened, leaf-like branches (*xylophylla*). Flowers in axillary tufts.—Several species, near Natal, some in Eastern district.

### 23. LACHNOSTYLIS, Turcz.

Flowers diœcious.—Male: Calyx 5-parted; sepals villous, imbricate in bud. Petals 5, alternate, obovate, glabrous, shorter than the calyx, inserted on the margin of an annular, villous-margined disk. Stamens 5; filaments shortly connate round a rudimentary ovary, then free; anthers ovate, introrse. Styles (of rudimentary pistils) 3, simple, very villous.—Female: Calyx and corolla of male. Ovary very hairy, 3-celled; cells pubescent within, 2-ovuled; styles 3, short, villous, above glabrous and 2-fid. Capsule pubescent, 3-celled.—*Turcz. Bull. Mosc. xix. p.* 503; *Sond. Linn. xxiii. p.* 131; *Baill. l. c. p.* 663; *DC. l. c. p.* 224.

Shrubs, with alternate, short-petioled, stipuled, oblong or obovate, penninerved and netted-veined, entire, glabrous leaves, and 1-flowered, solitary or tufted, axillary peduncles.—1 variable species, on the Eastern frontier.

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## ORDER CX. URTICACEÆ.

Flowers mostly unisexual, rarely polygamous or bisexual, apetalous. Calyx entire or variously cleft or parted; the lobes imbricate or valvate-induplicate. Stamens as many as the calyx-lobes and opposite them, rarely more or fewer, hypogynous; filaments mostly inflexed in bud; anthers 2-celled. Ovary free or more or less adherent, 1-celled, rarely imperfectly 2-celled; styles 1-2; ovule solitary, erect or pendulous, the micropyle always superior. Fruit a berry, nut, achene or samara. Albumen fleshy or none; radicle always superior.—Trees shrubs or herbs, dispersed over the warmer and temperate regions, very few in the frigid zone. Leaves often with stinging hairs (nettles), opposite or alternate, stipuled. Habits various.

Suborder 1. **Urticeæ.** Herbs or shrubs, with watery juice. Style simple or 0. Ovule orthotropous, erect.

Male flowers with 3-5 stamens.

Leaves almost always armed with stinging hairs.

Leaves opposite; achene equal-sided . . . . . 1. URTICA.

Leaves alternate; achene oblique . . . . . 2. FLEURYA.  
 Leaves destitute of stinging hairs.

Female flowers, calyx monophyllous, with a contracted 2-4-toothed mouth, enclosing the ovary . 3. POUZOLSIA.

Male flowers monandrous.

Male and female together in involucred glomerules.

Involucre 3-6-parted . . . . . 4. FORSKOHLIA.

Involucre bell-shaped, toothed at margin . . . 5. DROGUETIA.

Male and female together in nude glomerules . . . 6. DIDYMODXA.

Suborder 2. **Celtideæ**. Trees or shrubs, with watery juice. Stigmas 2, filiform. Ovule campylotropous, pendulous from near the top of the cell.

Male calyx-lobes imbricate. Stigmas 2, deciduous.

Berry naked . . . . . 7. CELTIS.

Male calyx-lobes valvate. Stigmas persistent, feathery.

Berry seated in the persistent calyx . . . . . 8. SPONIA.

Male perianth-lobes valvate. Styles 2, very long, villous . . . . . 9. CHÆTACHME.

Suborder 3. **Moreæ**. Trees or shrubs, with milky juice. Style simple or 2-fid. Ovule erect or pendulous.

Flowers minute, enclosed in a fleshy receptacle (Fig) . 10. FICUS.

## SUBORDER 1. **Urticeæ**.

### TRIBE 1. UREREÆ. (Gen. 1-2.)

#### 1. **URTICA**, Linn., *ex parte*.

Flowers monœcious or diœcious, glomerulate.—Male: Calyx 4-parted, the segments ovate, hispid. Stamens 4; anthers oblong-reniform. A rudimentary pistil.—Female: Calyx very deeply 4-parted or 4-sepaled; sepals or lobes unequal, the outer smaller. Ovary straight, ovoid; ovule erect, on a short basifixed stalk; stigma sessile or subsessile, penicillate-capitate. Achene compressed, equal-sided, smooth or roughish, enclosed in the enlarged calyx.—*Wedd. Urtic. p. 56, t. 1 C.*

Herbs, rarely shrubby, mostly covered with stinging hairs. Leaves opposite, toothed or lobed, 5-7-nerved.—The common perennial Nettle (*U. dioica*) is naturalized from Europe, and there are 1 or 2 native species, in the Eastern district.

#### 2. **FLEURYA**, Gaud.

Flowers monœcious or diœcious, in glomerules or forked or paniced cymules.—Male: Calyx 4-5-parted; segments ovate or lanceolate, glabrous or pubescent. Stamens 4-5. A rudimentary pistil.—Female: Calyx 4-parted or 4-lobed, the lobes mostly unequal, the inner largest. Ovary in growth becoming more or less oblique, ovoid; ovule subbasal, oblique, on a slender stalk; stigma sessile, ovate-lanceolate or linear, persistent and at length reflexed. Achene oblique, ovate or roundish, compressed, mostly rough with raised points on each

face, sitting in the scarcely enlarged calyx.—*Wedd. Urtic. p.* 109. *t.* 1 A.

Annuals, mostly with stinging hairs. Leaves alternate, serrate, 3-nerved.—3 or 4 species, in Eastern district and Natal.

## TRIBE 2. BOEHMERIÆ. (Gen. 3.)

### 3. POUZOLSIA, Gaud.

Flowers monœcious, in axillary or spiked glomerules; the male and female often mixed; bracts small, scarious.—Male: Calyx 3-5-parted; segments ovate, shortly acuminate, dorsally convex, valvate in bud. Stamens 3-5. A rudimentary pistil.—Female: Calyx tubular, often ovate, nerved, with a narrowed, 2-4-toothed orifice. Ovary enclosed, sessile, apiculate; ovule erect or ascending; stigma filiform, deciduous, villous on one side. Achene similar to the ovary, enclosed in the calyx, shining.—*Wedd. Urtic. p.* 389, *t.* 13 B.

Shrubs undershrubs or herbs, chiefly tropical, glabrous or pubescent. Leaves alternate, rarely opposite, equal- or unequal-sided, mostly entire, rarely toothed, 3-nerved, the lateral nerves branched, not reaching the apex of the leaf.—*Urtica procridioides*, E. M., is referred here by Weddell. There is also a second species from Natal.

## TRIBE 3. FORSKOHLIÆ. (Gen. 4-6.)

### 4. FORSKOHLIA, Linn.

Flowers monœcious, the sexes mostly together within 3-6-parted, turbinate, axillary involucre, very woolly within; rarely the female solitary in a 2-leaved involucre.—Male: Calyx monophyllous, narrow-tubular at base, dilated above, obtusely 3-toothed. Stamen 1. No rudimentary pistil.—Female: Calyx 0. Ovary straight, ovate or elliptic-lanceolate, woolly, tapering into a filiform, villous-hispid stigma; ovule sometimes oblique. Achene straight, compressed, ovate, very densely woolly.—*Wedd. Urtic. p.* 532. *t.* 19 B.

Herbs or undershrubs, armed with rigid, subpungent hairs. Leaves alternate, crenate or toothed, 3-nerved.—1 Cape species, *F. candida*, Linn., with coarsely serrate, rigid, ovate leaves, white beneath.

### 5. DROGUETIA, Gaud.

Flowers monœcious, both sexes within gamophyllous, bell-shaped or ventricose, axillary or racemose-spicate, few- or many-flowered involucre.—Male: Calyx narrow-tubular at base, woolly externally, dilated above, enclosing the solitary stamen in the bud, at length torn open. No rudimentary pistil.—Female: Calyx 0. Ovary woolly or glabrous; stigma

filiform, villous; ovule erect or ascending. Achene either woolly or shining.—*Wedd. Urtic. p. 538. t. 19 A.*

Perennial herbs or undershrubs, chiefly African. Stems smooth. Leaves alternate or opposite, serrate, destitute of hooked hairs. Involucre toothed, pubescent or tomentose.—*D. ambigua*, Wedd. (*Parietaria urticæfolia*, E. M.), is the only Cape species.

### 6. DIDYMODXA, E. Mey.

Flowers monœcious, the sexes mixed together, not involucrate.—Male: Calyx monophyllous, bract-like, shortly tubular at base; the limb hood-like, acuminate; the margins ciliate, closely cohering in the lanceolate bud. Stamen 1.—Female: Calyx wanting or adhering to ovary. Ovary straight, ovate, tipped with a capitate or shortly filiform, villous, often incurved stigma; ovule erect. Achene subobliquely ovate, compressed, one margin keeled or crested.—*Wedd. Urtic. p. 547. t. 15 B.*

Weak, procumbent, branching annuals, growing in shady places; formerly referred to *Parietaria*. Leaves alternate, crenate or quite entire, 3-nerved; stipules free, petiolar, scarious, ciliate. Glomerules 5–20-flowered. Flowers small, green.—3 species, 2 of them Eastern.

## SUBORDER 2. Celtideæ. (Gen. 7–9.)

### 7. CELTIS, Tourn.

Flowers polygamous, dimorphous. — Male: Calyx 4–5-parted; the segments concave, strongly imbricate in bud. Stamens 4–5, inserted under a rudimentary, pilose cushion; anthers included, gibbous at base, introrse.—Hermaphrodite: Calyx deciduous. Stamens as in the male. Ovary on a pilose disk; stigmas 2, deciduous. Berry nude, equal-sided.—*Endl. Gen. n. 1851; Planch. in Ann. Sc. Nat. Ser. 3. x. p. 263.*

Trees and shrubs with alternate, 3-nerved leaves, often serrulate, and axillary small flowers.—4 Cape species, in the Eastern districts and at Natal.

### 8. SPONIA, Comm.

Flowers polygamous, 3-morphous.—Male: Calyx 5-parted; the lobes subvalvate-induplicate in bud; the margins minutely overlapping. Anthers at length exserted, the cells not conspicuously gibbous at base, introrse.—Hermaphrodite: Calyx of male, the lobes less inflexed at edges.—Female: Calyx-lobes flattish, imbricate at base. Berry minute, crowned by 2 feathery styles, and seated in the persistent calyx.—*Endl. Gen. n. 1852. Planch. l. c. p. 264.*

Tropical and subtropical trees. Leaves 3-nerved, mostly greyish and pubescent, serrate. Flowers small, in axillary cymes; the males and hermaphrodite often together, the female on separate twigs.—2 species at Natal.



## 9. CHÆTACHME, Planch.

Flowers monœcious; the males tufted, the females solitary.—Male: Calyx 5-parted; the lobes valvate-induplicate, concave. Stamens 5; anthers ovate, apiculate, included. A rudimentary ovary.—Female: Calyx small, 5-toothed, persistent. Ovary ovate, with 2 very long, villous styles. Fruit a nut?—*Planch. l. c. p. 266; Harv. Thes. t. 25.*

Cape shrubs, with ovate, subentire, rigid, midribbed, penninerved leaves, closely netted-veined beneath and tipped with a bristle-shaped point.—1 or 2 species, in the Eastern districts.

SUBORDER 3. **Moreæ.** (Gen. 10.)10. **FICUS**, Tourn.

Receptacles fleshy, closed, globose or pyriform, scaly-bracted at base. Flowers very many, minute, covering the inner surface of the receptacle, pedicellate, either diœcious or the upper male, the rest female.—Male: Calyx 3-parted. Stamens 3.—Female: Calyx 5-fid. Ovary 1-celled, sublateral on a short pedicel; ovule pendulous. Style lateral, filiform.—*Endl. Gen. n. 1859.*

Trees or shrubs of hot countries; the common Fig being the type of the genus, which has recently been broken up into several, not here adopted. Leaves alternate, entire or lobed, stipuled, the stipules large, convolute, enwrapping the terminal bud, and mostly deciduous. Receptacles ("figs") axillary, solitary or several together.—There are several Cape species, natives of the Eastern districts and Natal.

ORDER CXI. **BETULACEÆ.**

Flowers monœcious, in catkins.—Male: Bract peltate, with lateral scale-like bracteoles, 3-flowered. Calyx scale-like or 4-leaved. Stamens 4.—Female: Bract sessile, entire or 3-lobed, enlarging with the fruit, 2-3-flowered. Calyx 0 or scaly. Ovaries 2-3 under each bract, 2-celled; ovules solitary, pendulous; style 0; stigmas 2, filiform. Fruit of nuts embedded in cone-like receptacles, formed of the hardened and enlarged scales of the female catkin. Albumen 0.—Trees and shrubs, chiefly of the Northern hemisphere. The Birch (*Betula*) and the Alder (*Alnus*) are the only genera.

1. **ALNUS**, Tourn.

Male: Bracts 5-bracteolate, 3-flowered. Calyx 4-parted. Anthers ovate, 2-celled.—Female: Bracts imbricate, fleshy, each with 3 or 4 scales in the axis. Ovaries in pairs under

each scale. False-cone formed of hard ligneous scales. Nuts compressed, angular, wingless, 1-seeded.—*Endl. Gen. n.* 1841.

The common Alder (*A. glutinosa*) is found throughout the colony, apparently wild, but whether truly so or not I cannot say.

## ORDER CXII. SALICINÆÆ.

Flowers diœcious, in catkins.—Male: Calyx 0. Disk fleshy, glandular, annular or cup-like. Stamens 2 or more, inserted on the torus; filaments filiform; anthers 2-celled.—Female: Calyx 0. Disk as in the male. Ovary sessile, formed of 2 carpels, whose edges are either valvate or more or less inflexed, 1-celled; ovules many, ascending; styles 2, more or less connate. Capsule bivalve, many-seeded, splitting through the centre; seeds many, minute, hidden in silky hairs of the seed-stalk.—Trees and shrubs, chiefly of the Northern hemisphere. The Order consists of but two genera, *Populus* (the Poplar) and *Salix* (the Willow).

### 1. SALIX, Tourn.

Male: Bracts undivided. Disk a gland. Stamens 2-3-5; filaments free or monadelphous.—Female: Bracts as in male. Styles very short; stigmas 2-lobed.—*Endl. Gen. n.* 1993.

The *Salix Capensis*, Thunb., is said to be one of the greatest ornaments of the banks of the river Gariep; *S. hirsuta*, Thunb., is a silky-leaved form of the same.

## ORDER CXIII. MYRICÆÆ.

Flowers monœcious or diœcious, in simple or branched catkins.—Males in filiform catkins. Bracteoles 2, one on each side of the bract, sometimes wanting. Calyx 0. Stamens 2-4-6-8, some often abortive; filaments filiform; anthers 2-celled, extrorse, basifixed, didymous.—Female: in ovate or cylindrical catkins. Hypogynous scales 2-6. Ovary compressed or subglobose, 1-celled; ovule solitary, erect; style very short; stigmas 2, elongate, subulate or lanceolate, papillose. Fruit dry, indehiscent, or covered with fleshy scales and pseudo-drupaceous, 1-seeded. Albumen 0.—Shrubs, commonly with balsamic odours. Leaves alternate, simple, entire or serrated. Stipules 0.

1. **MYRICA**, Linn.

Character the same as that of the Order.—*Endl. Gen. n.* 1839; *DC. Prod. xvi. pt. 2. p. 147.*

There are nine Cape species dispersed through the colony. The fleshy scales that clothe the fruit of some species secrete a sort of vegetable wax, which may be profitably collected.

ORDER CXIV. **RAFFLESIIACEÆ.**

Calyx monophyllous, regular. Corolla 0. Anthers numerous, in a simple series. Ovary with many, many-ovuled placentas; ovules orthotropous. Fruit indehiscent, fleshy, many-seeded. Seeds microscopic; embryo with or without albumen, undivided.—Fleshy, leafless, but often scaly, coloured parasites on the roots, rarely on the stems of dicotyledonous plants.

Calyx fleshy, 3-fid, with valvate æstivation . . . . . 1. **HYDNORA**.  
Calyx 6-fid, imbricate in the bud . . . . . 2. **CYTINUS**.

TRIBE 1. **HYDNOREÆ.**1. **HYDNORA**, Thunb.

Flowers hermaphrodite. Calyx fleshy, tubular, 3-fid, with valvate æstivation. Stamens monadelphous; anthers numerous, longitudinally splitting, connate in a 3-lobed ring, each lobe opposite one of the segments of the perianth. Ovary inferior, 1-celled; stigma sessile, depressed, 3-lobed, each lobe formed of many, parallel lamellæ, distinct down to the cavity of the ovary, and there placentiferous; placentas very numerous, pendulous from the roof of the ovarian cavity, everywhere covered with orthotropous ovules. Pericarp globose, fleshy, filled with the enlarged seed-bearing placentas. Embryo globose, in the centre of cartilaginous albumen.—*R. Br. in Linn. Trans. xix. p. 244; Harv. Thes. t. 187-8; Endl. Gen. n. 724.*

Fleshy, offensively-scented parasites on the roots of *Euphorbiæ*, in the Western and North-Western districts. Their stems are underground, 4-angled, and tuberculated along the angles. The flowers 4-6 in. long, issuing from a tubercle of the stem, with a dull brown, scurfy or irregularly areolated coat; the segments are internally of a rosy-red, which is also the colour of the fleshy parts.—2 species known.

TRIBE 2. **CYTINEÆ.**2. **CYTINUS**, Linn.

Flowers monœcious or diœcious. Calyx tubular, 4-8-fid (the Cape species 6-fid), with imbricated æstivation.—Male:

Stamens united in a central column, definite (8-12) ; anthers 2-celled, splitting lengthwise, extrorse, linear. Abortive ovary many-celled, the cells opening into the base of the calyx ; styles several, crowning the staminal column.—Female: No stamens. Ovary inferior, 1-celled, with numerous (8-16) parietal, prominent placentas ; ovules very many ; style single ; stigma capitate, radiate-lobed. Embryo undivided, exalbuminous.—*R. Br. in Linn. Trans.* xix. p. 245 ; *Hook. Ic. Pl. t.* 336 ; *Endl. Gen.* 723.

Somewhat succulent, coloured parasites on roots, with scale-like, imbricated leaves, and axillary, sessile flowers.—*C. dioicus*, the only Cape species, occurs on the roots of *Eriocephalus* about the sides of Table Mountain, Capetown.

## ORDER CXV. PIPERACEÆ.

Flowers bisexual or unisexual, nude (without calyx), sessile on a fleshy rachis, each subtended by a bract. Stamens 2, 3, or many, ranged on one side or all round the ovary ; anthers ovate, extrorse, 2- or 1-celled, adnate. Ovary sessile, solitary, 1-celled ; ovule solitary, erect, basifixed ; stigma sessile, terminal or oblique, simple or 3-4-lobed. Fruit fleshy, 1-seeded ; embryo minute, enclosed in a special cavity of the copious albumen.—Shrubs or herbs, often succulent, with jointed stems, opposite or rarely alternate leaves and spiked flowers. The common Pepper is a familiar example of the Order.

Flowers hermaphrodite.

A slender, jointed, climbing shrub ; stigmas 2, lanceolate . . . . .

1. COCCOBRYON.

Small, succulent herbs, of shady places ; stigma single, subglobose . . . . .

3. PEPEROMIA.

Flowers diœcious ; stigmas 3-5, short, sessile ; a slender climbing shrub . . . . .

2. CUBEBA.

### 1. COCCOBRYON, Kl.

Flowers hermaphrodite, in dense spikes. Bracts stipitate, peltate, with an orbicular, membrano-coriaceous, glabrous limb. Stamens 2, lateral, a third (sometimes wanting) above. Ovary sessile, ovate ; style short, persistent ; stigmas 2, lanceolate, thickish, recurved. Berry sessile, globose, pulpy, crowned with the style.—*Endl. Gen. Suppl.* iv. p. 16 ; *Miq. Pip.* 343.

A half-climbing forked shrub, with swollen joints ; ovate leaves, on long petioles, and peduncled spikes, opposite the upper leaf.—Eastern frontier and Natal.

### 2. CUBEBA, Miq.

Flowers diœcious, in spikes, sessile.—Male: (On smaller

spikes) imbricated with oblong, sessile bracts. Stamens 2-5, with terete filaments, and ovate or cordate-reniform, 2-celled anthers.—Female: Bracts peltate, persistent, subsessile, oblong or orbicular, often hairy beneath. Ovary sessile, ovate; stigmas 3-5, sessile, thick, short or shortly lanceolate, recurved, hispid above. Berry constricted at base, falsely pedicellate, subglobose; pericarp thin.—*Endl. Gen. Suppl.* iv. p. 16; *Miq. Pip.* p. 285.

Climbing shrubs or small trees, growing in woods. Leaves petioled, 3- or many-nerved or ribbed, membranous or coriaceous, glabrous or pubescent, those of each sex often differing. Spikes opposite the leaves; the male slender, the female thicker and slightly curved.—*C. Capensis*, Miq., the only species, was sent by Verreaux to Herb. Delessert: no habitat given.

### 3. PEPEROMIA, Ruiz and Pav.

Flowers hermaphrodite, in dense or lax spikes. Bract peltate, petioled or subsessile, persistent or deciduous. Stamens 2, lateral, free. Ovary ovate or oblong, sessile or half-sunk in the rachis; stigma undivided, sessile, deciduous, penicillate. Berry sessile, nearly dry, obliquely ovate or subglobose.—*Endl. Gen. Suppl.* iv. p. 15; *Miq. Pip.* p. 63.

Herbs, chiefly tropical, erect or creeping, succulent. Leaves opposite, whorled or alternate, mostly petioled. Spikes axillary or opposite the leaves.—1 or 2 small Cape species, found in very shady, damp places.

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## ORDER CXVI. PODOSTEMACEÆ.

Flowers inconspicuous, naked or bursting through a spathe or with imperfect perianth, or with 3 sepals. Stamen 1 or 0, hypogynous, distinct or monadelphous, sometimes unilateral. Ovary 1-3-celled, with numerous ascending anatropous ovules attached to a fleshy axile or parietal placenta; style 0; stigmas 1-3. Fruit ribbed, capsular, of 2-3 deciduous valves. Seeds numerous, minute, exalbuminous.—Branched herbs or foliaceous expansions, attached to stones in rivulets, always more or less submerged, often resembling cryptogamous plants. Flowers inconspicuous, sessile or pedicelled, axillary or terminal.

Flowers dioecious. Perianth 0 . . . . . 1. HYDROSTACHYS.  
Flowers hermaphrodite.

Stamens 2, monadelphous. Perianth a spathe . . . 3. SPHEROTHYLAX.  
Stamen solitary. Perianth 3-parted . . . . . 3. TRISTICHA.

### 1. HYDROSTACHYS, Petit Thouars.

Flowers dioecious, sessile in the axils of imbricating bracts. Perianth 0.—Male: Stamen 1; filaments forked, each fork



bearing half an anther that bursts outwardly.—Female: Ovary minute, plano-convex; stigmas 2, filiform; ovules numerous, on 2 parietal placentas. Capsule bursting by 1 longitudinal slit. Seeds very minute.—*Tulasne, Monog. Podostem. p. 47.*

Perennial, stemless water-plants, growing on stones, natives chiefly of Madagascar. Leaves few, very long, simple or compound, often covered with appendages. Scapes long, naked or scaly below, above covered with imbricating floriferous bracts.—1 species, from Natal, apparently identical with a Madagascar one (*H. imbricata*).

## 2. SPHÆROTHYLAX, Bischoff.

Flowers hermaphrodite, at first sessile in a spathe, which bursts irregularly, finally exerted on a pedicel. Perianth 0. Stamens 2, monadelphous, with 2 lateral staminodia; filament of the fertile stamens united to the middle; anthers 2-lobed, bursting inwardly. Ovary oblique, 1-celled; stigmas 2, free, short, linear; ovules very numerous, on a thick central placenta. Capsule ribbed, 2-valved, very many-seeded.—*Tulasne, Monog. Podostem. p. 160.*

A small, creeping, almost leafless plant, forming small, green expansions (fronds) on stones under water, which consist of much-branched, interlacing, linear lobes. Spathes sessile on the fronds.—Only 1 species known, from Natal.

## 3. TRISTICHA, Petit Thouars.

Flowers hermaphrodite. Perianth membranous, 3-parted. Stamen 1; anthers ovate, 2-celled, bursting inwardly. Ovary shortly stalked, 3-celled; stigmas 3, short, linear; ovules very numerous, in the angles of the cells, on very thick placentas. Capsule 3-gonous, 9-ribbed, 3-celled, 3-valved, many-seeded.—*Tulasne, Monog. Podostem. p. 179.*

African and American subnerged, moss-like plants. Stems slender, branched. Leaves small, ovate, entire, crowded, scattered or whorled. Flowers axillary or terminal, solitary or crowded.—2 species, from Natal.

## SUBCLASS 2. GYMNOSPERMÆ.

### ORDER CXVII. GNETACEÆ.

Flowers in monœcious or diœcious catkins, accompanied by torn sheaths or paleæ, the male girt with a 2-fid sheath. Stamens 1 or more, connate at base or in a column; anthers 2-4-celled; cells opening by an oblong pore. Ovules sessile, erect, orthotropous, with a single, double or triple coat, the outer coat opening by a narrow mouth, the inner produced

into a long, exserted tube, with an oblique, expanded or lacerate mouth. Seed with a hardened or a fleshy coat; embryo antitropal, in the apex of fleshy albumen; cotyledons 2, radicle superior.—Ligneous plants, of very varied habit; only 1 South African, the most wonderful of ligneous plants.

### 1. **WELWITSCHIA**, Hook. f.

Polygamo-diœcious? Flowers in cones; scales of the cone quadrifariously imbricate, most of them floriferous, much enlarged in fruit. Flowers either hermaphrodite or female.—Hermaphrodite flowers: Perianth 4-leaved, the leaflets 2-seriate, the inner connate. Stamens 6, monadelphous; anthers 3-celled. Integument of the ovule single, ending in a stigma-like disk.—Female flowers: Perianth bladdery, much-compressed, 2-winged. Stamens 0. Ovule as in the hermaphrodite flower, but the styliform process straight, with a simple, torn apex. Fruit dry, concealed within the membranous scales of the female cone.—*Abridged from Hook. f. in Trans. Linn. Soc. xxiv. pp. 1–48. t. 1–14.*

*A. mirabilis*, Hook. f., is a most singular, ligneous, 2-leaved plant, gummy at the crown; it grows in Damaraland, near Waalvisch Bay, and northwards to Cape Negro. Trunk very thick, top-shaped or globose, the greater portion sunk in the soil, more or less compressed beneath the insertion of the leaves, cross-ridged and furrowed round the circumference, and above the leaves dilated into 2 ample, depressed, rough, floriferous lobes corresponding to the leaves, at base tapering into a long or short fusiform root, branching near its lower extremity. Leaves 2 (the persistent cotyledons), opposite, very long, linear-ligulate, obtuse, thickly coriaceous, soon torn by the winds and splitting into many longitudinal shreds. Floriferous lobes very hard, wider than the trunk, depressed in the middle, entire or multilobulate, on the top marked with concentric, pitted ridges. Cone-bearing peduncles numerous, placed on the outer ridges, towards the circumference of the lobes, forked, terete, tumid and 2-bracteate at the nodes. Fruit-cones 2 inches long, scarlet, with persistent scales.

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## ORDER CXVIII. **CONIFERÆ**.

Flowers unisexual: Males of 1 or several monadelphous stamens in catkins; anthers 2- or many-lobed, often crested: Females of naked, atropous ovules, either solitary or in spikes or in cones. Fruit either a naked seed or a cone. Seed with a hard crustaceous coat. Embryo in the axis or apex of floury or fleshy albumen; cotyledons 2 or more.—Trees or shrubs, abounding in resin, with small, parallel-veined, mostly perennial leaves. The Pine, Yew, Cypress, etc. are examples.

SUBORDER 1. **Podocarpeæ**. Ovules solitary or subsoli-

tary in a lax spike.—Trees or shrubs with linear or ovate, nerved or nerveless leaves.

### 1. **PODOCARPUS**, L'Hérit.

Flowers diœcious or rarely monœcious on different branches.—Male: Catkins terminal or axillary, solitary or tufted, loosely spiked or subracemose, nude, girt at base with imbricate bracts. Stamens many, on the axis; filaments very short; anthers 2-celled, with a scale-like connective, extrorse.—Female: In 1-2-flowered spikes, the bracts confluent with a fleshy rachis, or an ebracteate fleshy rachis serving as a receptacle for the seed. Ovule 1, sessile under the apex of a scale, inverted, adnate throughout its length to the scale, the outer coat prolonged into a short neck, covering the inner. Seed inverted, its outer coat fleshy, inner bony; embryo in the apex of fleshy albumen.—*Endl. Gen. n.* 1800.

Trees or shrubs, widely dispersed. Leaves rarely opposite, commonly scattered, linear or oblong, 1-nerved or nerveless.—There are a few South African species, of which the common "Yellow Wood" (*P. latifolius*) is the best known.

**SUBORDER 2. Cupressineæ.** Ovules 1 or more, sometimes many, at the bases of peltate, hard scales, arranged in small capitate cones.—Trees or shrubs, with alternate opposite or ternate, narrow or small and scale-like leaves.

### 2. **WIDDRINGTONIA**, Endl.

Flowers diœcious.—Male: Catkins terminal, solitary, minute, with a diphyllous involucre. Stamens many, decussately opposite on an axis, quadrifariously imbricate; filaments very short, produced into an obliquely peltate, scale-like connective, bearing 2 anther-cells on its underside.—Female: Catkins at the ends of lateral ramuli, solitary. Ovuliferous-scales 4, equal, shortly mucronate below the apex, valvately connate round a short axis. Ovules 5-10, at the base of each scale, erect. Cone subglobose, 4-valved, the valves woody, mucronate, erect. Seeds few, winged.—*Endl. Gen. n.* 1790.

South African trees, the "Cedars" of the Cederberg Mountains. Leaves closely set, alternate, in the young plant linear-acicular, spreading, in the adults scale-like, densely imbricate, often glanduliferous at back.

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## ORDER CXIX. **CYCADEÆ.**

Flowers unisexual.—Male-flowers in cones, each floret consisting of a scale or anther, bearing pollen on its under surface

in 2-valved cells, which cohere by twos, threes, or fours.—Females either collected in cones or surrounding the central bud in the form of contracted leaves or scales. Ovules exposed on the margin of the scale or contracted leaf. Embryo in the axis of fleshy or horny albumen; radicle next the apex of the seed.—Arborescent plants, resembling small Palms or Tree-ferns, with cylindrical, simple or branched trunks, crowned with many long, pinnatisect leaves.

Stem cylindrical; pinnæ of the leaves without midrib, finely many-nerved longitudinally . . . . 1. ENCEPHALARTOS.  
Stem turnip-like; pinnæ midribbed, with divergent, forked veins . . . . . 2. STANGERIA.

### 1. ENCEPHALARTOS, Lehm.

Flowers in catkins.—Male: Catkins peduncled, terminal, their scales rhomboid-peltate, with a narrow, thickened apex, covered everywhere on the lower surface, with sessile, 1-locular anthers.—Female: Cone with rhomboid-peltate scales, dilated and thickened at the apex. Ovules in pairs, inverted. Seed with a fleshy covering and a bony coat.—*Endl. Gen. n. 705.*

Trees, with cylindrical, simple trunks, rough with the bases of fallen leaves. Leaves (or fronds) crowning the trunk, pinnatisect, the pinnæ broad-based, sessile, without obvious midrib, many-nerved, often spinous-toothed above the middle.—There are several species, natives of the Eastern district and the countries beyond. Colonial name “Kafir Bread.”

### 2. STANGERIA, T. Moore.

Flowers in catkins.—Male: Catkins cylindrical, with rhomboid scales, bearing innumerable, 1-celled, subsessile anthers.—Female: Cone ovoid or shortly cylindrical. Ovules in pairs, inverted.—*Hook. f. in Bot. Mag. t. 5121.*

A small, ligneous plant, with a short, swollen stem, scarcely scarred. Leaves few, from the apex of the stem, pinnate, glabrous; pinnæ opposite, in about 12 pairs, oblong-lanceolate, acuminate, spinose-serrulate beyond the middle, with a strong midrib, from which diverge to the margin, very closely set, subparallel, forked veins. The petiole, scales at base of cones, and the catkins densely woolly.—*S. paradoxa*, Moore, found at Natal.

## CLASS II. MONOCOTYLEDONS.

## ORDER CXX. HYDROCHARIDÆ.

Flowers mostly unisexual. Perianth of 3-6 segments, either all petal-like or the 3 outer smaller and herbaceous, with a tube adherent to the ovary in the females; without any tube in the males. Stamens 3-12. Ovary inferior, 1-celled, with 3 parietal placentas, or 3-, 6-, 9-celled; styles 3, 6, or 9, with entire or 2-fid stigmas. Fruit small, ripening under water, indehiscent. Seeds several, without albumen.—Aquatic herbs. Leaves undivided. Flowers enclosed when young in an involucre or spathe of 1-3 leaves or bracts.

## 1. LAGAROSIPHON, Harv.

Flowers diœcious.—Male: Spathe sessile, compressed, 2-fid, many-flowered; flowers pedicelled. Perianth 6-parted, petaloid, the outer segments larger. Stamens 6, 3 bearing anthers opposite the outer segment of perianth; 3 antherless, filiform, alternate with them; anthers 2-celled, 2-fid.—Female: Spathe sessile, oblong, compressed, 2-fid, 1-flowered; flowers sessile. Perianth-tube very long, filiform; limb 6-parted. Stamens 6, abortive, filiform, short. Ovary inferior, 1-celled, with 3 parietal placentas; ovules few, erect; style connate with the perianth-tube, and as long; stigmas 3, 2-parted; lobes mammillate. Pericarp membranous, 2-3-seeded. Seed cylindrical.—*Harv. in Hook. Lond. Journ. Bot.* 1842, p. 230. t. 22.

*L. mnioides* is a lacustrine and river plant, wholly submerged, branching, 1-2 ft. long, slender, pellucid. Leaves alternate, opposite or whorled, linear-attenuate, 1-nerved, serrulate. Flowers axillary.—Eastern district.

## ORDER CXXI. SCITAMINEÆ.

Flowers hermaphrodite, irregular. Perianth superior, of 9 segments in 3 series; outer (calyx) herbaceous, rarely petaloid, tubular or spathaceous; inner of 6 unequal pieces in 2 series, united into a tube; upper larger hooded or expanded. Staminodes united to the tube of the inner perianth. Stamen 1, epigynous; filament free, usually dilated and petaloid and winged; anthers of 2 parallel, introrse cells, adnate to the face of the filament. Ovary 3-celled; style fili-



form, embraced by the anther-cells; stigma capitate or 2-lamellate or dilated; ovules numerous, horizontal, attached to the inner angle of the cells. Fruit usually capsular, 3-valved, crowned with the persistent perianth; many-seeded. Seeds with or without an aril; outer albumen floury; inner horny; embryo straight.—Herbs, with perennial, creeping root-stocks or tubers. Leaves all radical and sessile or their long sheaths forming erect stems.

### 1. KÆMPFERIA, Linn.

Outer perianth (calyx) tubular, slit on one side; inner of 3 pieces, 3 outer equal narrow; 3 inner combined into a large flabelliform 3-lobed lip; filaments produced above the anther into a large 2-fid or 3-fid, toothed crest. Stigma fan-shaped, ciliated.—*Cienkowskia*, *Schweinfurth*, *Beitrag*, *Fl. Æthiop.* 197. t. 1.

Stemless herbs, with numerous fascicled tuberous roots. The tubers spindle-shaped, on long stalks. Leaves ovate or lanceolate. Scapes radical, covered with sheathing, spathaceous bracts. Flowers large and handsome. —1 blue-flowered species, from Natal, found by Gerrard, and, apparently, the plant figured in Schweinfurth's 'Flora Æthiopiensis,' and there called *Cienkowskia Æthiopica*.

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## ORDER CXXII. ORCHIDACEÆ.

Flowers bisexual. Perianth with a ringent or irregular 6-parted limb; the outer segments usually coloured and the odd one (by a twist in the ovary) uppermost; inner segments more petaloid, two lateral similar, the odd one (labellum) unlike the others, often lobed or spurred at base. Stamens normally 3, united in a central column, of these (in the Cape genera) only 1, opposite the back sepal, bears an anther. Anther deciduous or persistent, 2-, 4-, 8-celled; pollen cohering in definite or indefinite waxy masses, rarely powdery. Ovary 1-celled, inferior, with 3 parietal placentas; ovules indefinite; style combined with the staminal column; stigma a viscid cavity or disk in front of the column. Capsule 3-ribbed, 3-valved. Seeds exalbuminous, minute, with a loose coat.—Herbaceous plants with simple, entire, generally sheathing or amplexicaul leaves, either terrestrial with tuberous roots or epiphytical, attached to other plants or to rocks by cylindrical or filiform aerial roots. These last, the "air-plants," are most numerous in the Tropics, particularly of America; a few are found in our Eastern frontier and beyond it. Of the seven tribes under which the Order is distributed, but three are represented in South Africa.

Tribe 1. MALAXIDÆ. Anther opercular, deciduous. Pollen-masses (pollinia) waxy, 2-4-8, without caudicle or separate stigmatic glands. (Gen. 1-2.)

Petals linear or filiform; labellum entire; column slender . . . . .

1. LIPARIS.

Petals oblong; labellum 3-lobed, jointed with the produced base of the short column . . . . .

2. POLYSTACHYA.

Tribe 2. VANDEÆ. Anther opercular, deciduous. Pollen-masses waxy, 2-4-8, fixed to a caudicle, united to a deciduous, stigmatic gland. (Gen. 3-9.)

\* Pollen-masses 2.

Labellum wholly spurless.

Sepals and petals free.—Epiphytes, with paniced flowers . . . . .

3. CYMBIDIUM.

Sepals and petals connate with the much-produced base of the column.—Ground orchids, with racemose flowers . . . . .

5. CYRTOPERA.

Labellum saccate or shortly spurred at base.

Sepals and petals subequal . . . . .

4. EULOPHIA.

Petals much larger and brighter-coloured than the sepals . . . . .

6. LISSOCHILUS.

Labellum with a long, filiform or cylindrical spur.

Pollen with a short caudicle and triangular gland . . . . .

7. ANGRÆCUM.

Pollen with a 2-legged caudicle, each leg with a peltate gland . . . . .

8. MYSTACIDIUM.

\*\* Pollen-masses 8, united in fours. Ground

plants, with racemose flowers . . . . .

9. CALANTHE.

Tribe 3. OPHRYDEÆ. Anther terminal, persistent. Pollen masses granular, indefinitely numerous, clustering round a highly elastic, slender thread, attached at base to a stigmatic gland. (Gen. 10-39.)

\* Labellum with one spur, or at least saccate at base.

Anther-cells parallel, not divergent at base.

Petals entire.

Labellum 3-5-7-lobed.

Petals spreading, larger than the sepals . . . . .

10. HOLOTHRIX.

Petals erect, thin, much smaller than the sepals . . . . .

20. SCHIZOCHILUS.

Labellum expanded, multifid, the lobes filiform . . . . .

21. BARTHOLINA.

Petals (and labellum) lacero-multifid . . . . .

15. SCOPULARIA.

Anther-cells divergent at base.

Having both radical and cauline leaves or sheaths.

Spur very short or saccate . . . . .

11. PERISTYLUS.

Spur long or very long . . . . .

16. HABENARIA.

Having 1-2 radical leaves only; scape sheathless.

Labellum posticous; sepals converging, the lateral saccate . . . . .

12. SACCIDIUM.

Labellum anticus.

Petals entire.

Sepals membranous, connate at back ; petals fleshy, acuminate. 14. MONOTRIS.

Sepals herbaceous, converging ; petals membranous, linear or lanceolate . . . . . 17. TRYPHIA.

Petals toothed, fleshy, converging . 18. BUCCULINA.

\*\* Labellum boat-shaped at base (not saccate), 3-toothed at apex . . . . . 32. BRACHYCORYTHIS.

\*\*\* Labellum 2-spurred or 2-saccate at base, helmet- or funnel-shaped.

Labellum helmet-shaped ; stigma 2-lipped, the upper lip very large.

Sepals 3, separate ; petals 2, similar . . 22. SATYRIUM.

Sepals connate, in a 3-toothed lip ; petals 0 . . . . . 24. AVICEPS.

Labellum funnel-shaped ; stigma minute, truncate . . . . . 23. SATYRIDIMUM.

\*\*\*\* Labellum spurless, rarely subconcave.

(1) Labellum free (not attached to the face of column).

Labellum posticus.

Sepals spreading ; labellum entire (like the petals) . . . . . 13. PACHITES.

Sepals converging ; labellum 3-fid . . 19. STENOGLOTTIS.

Labellum anticus.

Back sepal galeate, spurred or saccate at back.

Pollinia attached to a single gland . . 27. MONADENIA.

Pollinia attached to 2 separate glands.

A 2-lobed appendix placed between the anther and rostellum ; flowers as in *Disa* . . . . . 31. HERSCHELIA.

No appendix between anther and rostellum.

Petals entire . . . . . 25. DISA.

Petals 2-lobed or twisted, narrow 28. SCHIZODIUM.

Back sepal spurless, either somewhat hood-like or quite flat.

Petals sessile, separate from the sepals.

Sepals valvate in bud ; labellum linear or filiform . . . . . 29. PENTHEA.

Sepals imbricate in bud ; labellum truncate, small, fleshy . . . . . 30. FORFICARIA.

Petals clawed, hood-shaped, attached by the base of their claws to the separate sepals.

Sepals entire ; petals and labellum fimbriate . . . . . 33. HUTTONÆA.

Sepals, petals and labellum all fimbriate . . . . . 34. HALLACKIA.

(2) Labellum attached to the face of the column.

Back sepal spurred ; labellum minute, filiform (perianth of *Disa*) . . . . . 26. BROWNLEEÆ.

- Back sepal spurless, forming with the petals a galea.  
 Lateral sepals spreading, petaloid, saccate or spurred . . . . . 39. *DISPERIS*.  
 Lateral sepals not saccate or spurred.  
   Labellum clawed, lunate; column horseshoe-like . . . . . 35. *CERATANDRA*.  
   Labellum sessile.  
     Petals unequally-lobed; anther erect 36. *OMMATODIUM*.  
     Petals undivided; anther resupinate.  
       Sepals petaloid; galea wide-mouthed . . . . . 37. *PTERYGODIUM*.  
       Sepals membranous; galea with a narrow mouth, the petals composing it saccate, fleshy . . . 38. *CORYCIUM*.

TRIBE 1. *MALAXIDÆ*. (Gen. 1-2.)

1. *LIPARIS*, Rich.

Sepals spreading, free, the lateral equal at base and mostly shorter. Petals narrower than the sepals, linear or filiform. Labellum ascending or erect, slightly adnate to the base of the column, often 2-tubercled above the base, entire. Column elongate, semiterete, incurved, margined at the apex. Anther 2-celled. Pollinia 4, collateral.—*Lindl. Orch. p. 26; Harv. Thes. t. 109.*

Terrestrial or epiphytic. Leaves concrete at base in a pseudobulb, either membranous and plaited or subcoriaceous with indistinct veins. Flowers rather small, herbaceous, racemose, rarely yellow or white.—2 or 3 Cape species, dispersed.

2. *POLYSTACHYA*, Hook.

Sepals erect, acute, the lateral larger, connate with the produced base of the column. Petals smaller. Labellum sessile, 3-lobed, jointed to the produced base of column, mostly inflexed. Column semiterete, short. Anther 2-celled. Pollinia 4, collateral, equal, cohering in pairs.—*Lindl. Orch. p. 72; Harv. Thes. t. 176, 177, 178, 179. Also Epiphora, Lindl. in Hook. Comp. Bot. Mag. ii. p. 201.*

Caulscent or pseudobulbous epiphytes. Leaves coriaceous, finely-nerved. Flowers panicled or racemose, yellow, the scape frequently pubescent.—4 Cape species, natives of the Eastern district and Natal.

TRIBE 2. *VANDÆ*. (Gen. 3-9.)

3. *CYMBIDIUM*, Sw.

Perianth expanded, the petals and sepals subequal, free. Labellum sessile, free, without spur, concave, sometimes jointed to the base of the column, sometimes shortly connate,

undivided or 3-lobed. Column erect, semiterete. Anthers 2-celled. Pollinia 2, mostly 2-lobed at back, subsessile on a triangular gland.—*Lindl. Orch. p. 161.*

Epiphytes (some terrestrial?) of various habit. The Cape species referred to this genus by authors belong to *Eulophia*; but Mr. Sanderson has recently discovered near Natal a fine plant (*C. Sandersoni*, mss.), which seems to be a genuine species. It has long, cylindrical pseudobulbs, coriaceous, many-ribbed leaves, and a tall scape, ending in a panicle of pale yellow flowers. Found between D'Urban and Athercliffe, 1860.

#### 4. EULOPHIA, R. Br.

Perianth expanded, the sepals and petals ascending, subequal, either quite free or connate with a more or less produced column. Labellum spurred or saccate at base, sessile, concave, very generally furnished with crested or bearded longitudinal ridges, sometimes smooth; often 3-lobed, sometimes undivided. Column semiterete, margined. Anther 1-2-celled. Pollinia 2, 2-lobed at back or hollow, with a short, linear caudicle and a transverse gland.—*Lindl. Orch. p. 180.*

Terrestrial, pseudobulbous plants. Leaves long, rigid, plaited or many-ribbed. Scape radical, simple or branched, many-flowered. Flowers dull-coloured, shaded with green, dull purple and white.—Many Cape species, dispersed.

#### 5. CYRTOPERA, Lindl.

Perianth expanded, sepals and petals ascending, subequal, connate with the much-produced base of the column. Labellum not spurred, concave, subventricose, 3-lobed, marked with crested or tubercled ridges. Column semiterete, margined. Anther 1-2-celled. Pollinia 2, 2-lobed at back, with a short, subtriangular caudicle.—*Lindl. Orch. p. 189.*

Terrestrial plants, with plaited leaves and fleshy stems, sometimes long and fusiform, sometimes short. Scapes radical; flowers racemose.—2 or 3 Cape species, Eastern.

#### 6. LISSOCHILUS, R. Br.

Perianth expanded; the sepals small, reflexed or spreading, herbaceous, free; the petals much larger, spreading, wing-like. Labellum saccate at base, concave, subentire or 3-lobed, mostly connate with the base of the column. Column erect, short, semiterete. Anther 2-celled, crested. Pollinia 2, 2-lobed at back, with a short linear caudicle and transverse gland.—*Lindl. Orch. p. 191.*

Terrestrial, pseudobulbous plants, resembling *Eulophia*, from which genus this chiefly differs by its large petals. Flowers paniced or racemose, showy, yellow and brown.—Several Cape species.



7. **ANGRÆCUM**, Pet. Th.

Perianth spreading; the sepals and petals subequal, free. Labellum sessile, continuous with the base of the column, fleshy, undivided, much wider than the petals, prolonged at base into a subcylindrical spur, usually much longer than the perianth. Column small, rarely elongate, semiterete. Anther 2-celled, truncate. Pollinia 2, 2-parted, with a narrow, short caudicle and triangular gland.—*Lindl. Orch. p.* 245; *Harv. Thes. t.* 107, 108.

Caulесcent epiphytes, with coriaceous, ligulate leaves, oblique at apex. Flowers solitary or racemose, mostly white.—Several Cape species, in Eastern district and Natal.

8. **MYSTACIDIUM**, Lindl.

Perianth spreading; the sepals and petals subequal, petaloid. Labellum with a very long, filiform spur, and undivided limb, jointed to the base of the column. Column short, straight, fleshy, semiterete, furnished at the apex, on each side, with a linear process. Rostellum ovate, elongate, convex, nude. Anther membranous, 2-celled. Pollinia 2, hollow-backed, with a long, 2-legged caudicle; the filiform legs each attached to a peltate gland.—*Lindl. in Hook. Comp. Bot. Mag. ii. p.* 205; *Harv. Thes. t.* 173, 174, 175.

Epiphytes, with the habit of *Angræcum*. Spurs of the labellum very long and slender.—3 species, natives of Eastern district and Natal.

9. **CALANTHE**, R. Br.

Perianth expanded, free, or the lateral sepals slightly attached to the labellum, subequal. Labellum connate with the column, lobed or entire, spurred or hornless, with the disk lamellate or tubercled. Column short, the rostellum mostly beaked. Pollinia 8, much attenuate at base, adhering in fours to a 2-partible gland.—*Lindl. Orch. p.* 249.

Terrestrial plants, with erect, many-flowered scapes. Leaves broad, plaited. Flowers white or lilac, rarely yellow.—1 species, *C. sylvatica*, found at Natal.

## TRIBE 3. OPHRYDEÆ. (Gen. 10–39.)

10. **HOLOTHRIX**, Rich.

Sepals converging, equal. Petals free, spreading, larger than the sepals. Labellum spurred, connate with the column, lobed, concave. Anther erect, with parallel cells. Glands of the pollinia in two separate hoods.—*Lindl. Orch. p.* 283.

Small herbs, with 1–2 radical leaves; a nude scape and minute, green or greenish flowers.—4 or 5 species, dispersed.

11. **PERISTYLIS**, Bl.

Sepals and petals subsimilar, converging as a hood, or the lateral sepals spreading. Labellum with a very short spur or sac at base, entire or 3-lobed. Anther-cells divergent at base. Glands nude. Rostellum flat, adnate to the anther. No fleshy process (as in *Habenaria*) to the lower tip of stigma.—*Lindl. Orch. p.* 297.

A small species, recently found by Mr. Gerrard in Zululand, seems to belong to this genus. It has the aspect of a *Habenaria*, and small, greenish flowers.

12. **SACCIDIUM**, Lindl.

Sepals converging, the lateral placed beneath the labellum and saccate. Petals fleshy, spathulate, twice as long. Labellum posterior, large, convolute, shortly spurred, fleshy and cleft at the apex. Anther reclinate, the cells distant at base. Pollinia small, the gland scarcely distinguishable from the thick caudicle.—*Lindl. Orch. p.* 301.

A small, very hairy Orchid, found by Burchell. Leaves unknown. Spike long, cylindrical, very dense. Flowers small.

13. **PACHITES**, Lindl.

Sepals spreading, the odd one a little larger. Petals and spurless; posterior entire, labellum similar. Anther stipitate, resupinate, the cells at base nearly adnate, not elongate, divergent; glands nude. Stigma with two channelled, projecting arms, and a very thick rostellum interposed between the anther and the arms.—*Lindl. Orch. p.* 301.

A rigid, thick-stemmed plant, 18 in. high, drying brown. Radical leaves 4 in. long, linear, fleshy, membranous, and dilated at base. Spike very dense, a foot long, cylindrical; flowers closely appressed. Bracts much acuminate, larger than the flowers. Sepals ovate, concave, acute. Petals ovate-oblong; labellum similar, but narrower.—Found by Burchell.

14. **MONOTRIS**, Lindl.

Sepals membranous, connate at back, the lateral distinct in front, much smaller than the labellum and petals. Petals fleshy, acuminate. Labellum free, fleshy at the apex, 3-fid, hood-shaped, spurred at base. Anther free, erect; the cells diverging at base; the outer valves dilated, incurved, covering the gland.—*Lindl. Orch. p.* 303.

A small plant, with a solitary radical leaf, a retrorsely hispid scape, and small, secund flowers, resembling those of a *Holothrix*.—Found by Burchell.

15. **SCOPULARIA**, Lindl.

Sepals membranous, converging, the lateral smaller. Petals membranous, lacero-multifid, convolute round the labellum. Labellum erect, convolute, membranous, spurred, lacero-multifid at the apex. Anther free, erect; cells close, parallel, dilated at base, ascending, forming a large, unequal-sided hood covering the glands.—*Lindl. Orch. p.* 303.

A small Orchid, with 2 roundish radical leaves, a nude, hairy scape, and a long, subsecund spike of small flowers; the upper ones of which are barren, their parts split into innumerable shreds, forming a brush-like crown to the inflorescence.—First found by Burchell; common in the Eastern districts, and varying according to situation.

16. **HABENARIA**, Willd.

Sepals and petals nearly alike, or the petals narrow and sometimes 2-parted, all converging over the column, or the lateral sepals spreading or reflexed. Labellum 3-lobed or rarely entire, long-spurred at base. Column free, reclined. Anther-cells with their bases divergent, adhering to the stigmatic channels. Rostellum flat or elongate and hooded or folded. 2 fleshy processes of the stigma projecting beyond the anther, sometimes very long, sometimes short.—*Lindl. Orch. p.* 306. *Also Bonatea, Willd., Lindl. p.* 327; *Harv. Thes. t.* 55, 88, 147.

A large genus, widely dispersed, chiefly in the temperate zones. Stem either leafy at the base, and sheathed above or leafy throughout. Flowers in a terminal spike or raceme, large or small.—Many Cape species, chiefly on the Eastern frontier, some of them of great beauty, though the flowers are not brightly coloured.

17. **TRYPHIA**, Lindl.

Sepals converging, equal, herbaceous. Petals linear or lanceolate, membranous, longer than the sepals, erect, adnate to the base of the labellum. Labellum membranous, spurred, deeply 3-5-cleft, connate with the column. Anther erect, small; lobes divergent. Rostellum ovate, flat. Glands nude.—*Lindl. Orch. p.* 333; *Harv. Thes. t.* 105.

Small herbs with 2 radical leaves, nude scapes, and very delicate, white flowers in secund spikes.—3 or 4 species, in the Eastern district.

18. **BUCCULINA**, Lindl.

Calyx galeate; the upper sepals smaller, the lateral obliquely attached to the base of the labellum. Petals fleshy, erect, toothed, converging (perhaps cohering), twice as large as the sepals. Labellum concave, deeply 5-parted, spurred. Column with the margins produced and adnate to the face of the labellum.—*Lindl. in Hook. Comp. Bot. Mag. ii. p.* 209.

A small Orchid, with 2 roundish, glabrous, radical leaves; a nude, reversely hairy scape, glabrous above, ending in a spike of 4-5 flowers. Open flowers  $\frac{1}{2}$  in. across.—Found by Drège between Mierenkastul and Zwartdoorn river.

### 19. STENOGLOTTIS, Lindl.

Sepals converging, free, subequal, the medial concave. Petals thinner, like the lateral sepals. Labellum posterior, spurless, lobed, free. Anther erect; the cells divergent at base; glands of the pollinia nude, hidden behind the rostellum. Rostellum minute, 3-toothed, slightly saccate on each side at base; lower lip of stigma long and tongue-shaped.—*Lindl. in Hook. Comp. Bot. Mag.* ii. p. 210; *Harv. Thes.* t. 56.

An herb, with many radical leaves, and a bracteate scape ending in a lax spike of yellow? flowers.—Found in the Eastern district and at Natal.

### 20. SCHIZOCHILUS, Sond.

Sepals erect, free, equal. Petals erect, free, very delicate, much smaller than the sepals. Labellum adnate to the column, spurred, fleshy, 3-fid. Anther erect, hooded, with parallel cells. Stigma hollow.—*Sond. in Linn.* xix. p. 78.

Herbs, with leafy stems, and spiked, yellow or white flowers.—Perhaps 2 species, found in Eastern district and Natal.

### 21. BARTHOLINA, R. Br.

Perianth ringent. Calyx tubular at base, secund, with equal segments. Petals parallel with the sepals, falcate. Labellum spurred, expanded, large; 3-lobed, the medial lobe multifid, the lateral 3-fid; all the laciniae filiform. Anther erect, elongate, with parallel, cucullate lobes. Pollinia small, on very long, channelled caudicles; the glands hidden under the hoods of the anthers.—*Lindl. Orch.* p. 333.

Small and most elegant Orchids, with a single, reniform, hairy, radical leaf; and a 1-flowered nude stem. Petals white, tinged with violet. Labellum very large in proportion, with a rounded outline, cloven into many slender, comb-like lobules, of a violet colour.—1 or 2 species, in the Western district.

### 22. SATYRIUM, Sw.

Perianth ringent, the lower lip formed by the subsimilar sepals and petals; the upper lip formed by the helmet-shaped, 2-spurred or 2-saccate posterior labellum. Column sessile or elongate. Anther resupinate; the cells parallel or divergent. Glands nude, separate. Stigma 2-labiate, the upper lip much larger than the lower.—*Lindl. Orch.* p. 335.

Herbs with leafy or many-sheathed stems, and spicate, often handsome, orange pink crimson or greenish flowers.—Many Cape species, dispersed.



### 23. SATYRIDIDIUM, Lindl.

Perianth ringent, the lower lip formed by the subsimilar sepals and petals ; the upper by the funnel-shaped, 2-spurred, acuminate labellum. Column slender, free. Anther straight, resupinate, with parallel cells. Stigma minute, truncate, at the apex of the column. Caudicles connate, attached to a single gland.—*Lindl. Orch. p. 345 ; Harv. Thes. t. 87.*

A single species, with the habit of *Satyrium*.—Western district.

### 24. AVICEPS, Lindl.

Perianth ringent, the lower lip 3-toothed, formed of the 3 cohering sepals ; the upper of the helmet-shaped, 2-saccate labellum. Petals none. Column terete, elongate, hidden under the galea. Stigma 2-lipped, the upper lip very large, emarginate ; the lower on each side produced into an arm-like process. Anther resupinate. Caudicles nude, lying along the arms of stigma ; glands nude.—*Lindl. Orch. p. 345.*

A small, densely-leafy plant. Flowers axillary, hid among the upper leaves. Known from the saccate species of *Satyrium* by the absence of petals.—Western districts, rare.

### 25. DISA, Linn.

Perianth ringent, the upper lip formed of the helmet- or funnel-shaped, spurred or saccate odd sepal ; the lower lip formed by the two flat, spreading lateral sepals and the labellum. Petals small, erect, adhering to the base of the column. Labellum free, filiform or dilated, entire or multifid, spurless. Column 2-parted (the anther and stigma separated). Anther 2-celled, erect or supine ; with 2 distant, nude glands. Stigma truncate or convex, with an obscurely 3-lobed disk, often tubercular, at the base of the column.—*Lindl. Orch. p. 346 ; Harv. Thes. t. 41, 85, 86.*

A large genus, dispersed through the colony and in Natal, including the finest of the Cape Orchids, as well as some of the humblest. Habit various ; leaves either all radical or radical and cauline. Flowers mostly spiked, rarely solitary. *D. grandiflora*, the glory of Table Mountain, has flowers 3-5 inches across.

### 26. BROWNLEEIA, Harv.

Perianth ringent, the upper lip formed of the galeate spurred odd sepal, and of the two petals whose inner margins adhere to it ; lower, of the two spreading, flat, lateral sepals. Labellum minute, inflexed, filiform, its base expanded, and adhering at each side to the column, forming therewith a little pocket. Anther ascending, 2-lobed.—*Lindl. in Hook. Lond. Journ. Bot. i. p. 16 ; Harv. Thes. t. 103, 104.*



Plants with the habit of *Disa*; differing in the petals and labellum. The genus consists, at present, of 3 species, of which the two first known were discovered by Rev. J. Brownlee, in Caffraria. Flowers sky-blue pinkish or white.

### 27. MONADENIA, Lindl.

Perianth ringent, as in *Disa*. Petals fleshy. Labellum free, oblong, fleshy, flat. Column small, 2-parted. Stigma fleshy, raised, truncate, at the base of the labellum. Anther resupinate, the caudicles united to a single gland.—*Lindl. Orch. p. 356.*

Plants with the habit of the leafy *Disas*, with dull-coloured, brownish-purple, greenish or yellowish flowers.—There are several species, dispersed through the colony.

### 28. SCHIZODIUM, Lindl.

Perianth ringent, the upper lip formed of the galeate and spurred back sepal, and the petals; the lower, of the spreading, channelled, lateral sepals and the labellum. Petals small, fleshy at the apex, unequally 2-lobed or obliquely twisted, often eared at base, attached to the column. Labellum free, either linear-acuminate, equalling the sepals, constricted above the base, or broad and more or less undulated on the surface. Column 2-parted. Stigma fleshy, raised, truncate or hollow at the base of the labellum. Anther resupinate or horizontal. Rostellum with either truncate or acuminate, twisted arms. Pollen-glands 2, nude.—*Lindl. Orch. p. 358.*

Small plants. Leaves radical, ovate or obovate, spreading, petioled. Stem rigid, mostly flexuous, sheathing at the bendings. Raceme few-flowered or flowers solitary. Flowers yellow or pink, the labellum often spotted.—Several species, in the Western district.

### 29. PENTHEA, Lindl.

Perianth as in *Disa*, except the back sepal spurless, either flattish or hooded. Petals unlike the sepals, mostly fleshy, attached to the base of the column, converging over the anther. Labellum linear or filiform, simple, free, much narrower than the petals, separated by a mostly 3-lobed stigma from the column. Anther terminal, erect or reclinate, with parallel cells, produced and often divergent at base, lying on the stigmatic arms. Glands 2, nude.—*Lindl. Orch. p. 360; Harv. Thes. t. 84.*

Herbs, of small size, resembling the leafy *Disæ*, with numerous narrow, channelled or very slender leaves, and corymbose, spiked or solitary, yellow white or mottled flowers.—Several species, in the Western districts. Scarcely generically different from *Disa*.

30. **FORFICARIA**, Lindl.

Perianth concave, ringent. Sepals free, concave, the intermediate spurless, larger than the lateral, and lapping over them in the bud. Petals free, subulate, abruptly twice bent in the bud. Labellum fleshy, truncate, free, small. Anther reclinate, with parallel, close-lying cells, and 2 nude, triangular glands. Stigma adnate, hollow, simple.—*Lindl. Orch. p. 362.*

A single species, with rigid, linear, acute radical leaves, and racemose flowers.—Found in Dutoit's Kloof by Drège.

31. **HERSCHELIA**, Lindl.

Perianth ringent, as in *Disa*. Petals hidden under the galea, fleshy, collateral, eared at base, hatchet-shaped at the apex, twice as long as column. Labellum oblong, fleshy, quite entire. Column small, 2-parted. Stigma fleshy, raised, concave, at the base of the labellum. Rostellum 3-parted; the lateral lobes narrower, acuminate; a dorsal, linear, 2-lobed appendix is placed in front of the anther. Anther horizontal, with parallel, short cells; glands 2, very large, truncate, horny, toothed.—*Lindl. Orch. p. 362.*

*H. cœlestis*, Lindl., the only species, grows on the summit of Table Mountain, flowering in March. It has many setaceous, radical leaves, and a slender distantly-sheathed stem, 1-2 feet high, ending in a raceme of 4-6, sky-blue flowers. A most elegant plant, with the aspect of a *Disa*, sect. *Trichochila*.

32. **BRACHYCORYTHIS**, Lindl.

Perianth oblique. Sepals free, the back one slightly concave, ovate, much smaller than the lateral, unequal-sided ones. Petals oblong, erect, oblique at base, fleshy in the middle, adnate at base to the column. Labellum longer than the lateral sepals, coriaceous, concave at base, but spurless, dilated and 3-toothed at the apex. Anther reclinate, 2-celled, pedicelled, adnate to the large, ovate stigma, hidden within the cavity of the labellum. Glands 2, nude.—*Lindl. Orch. p. 363; Harv. Thes. t. 53, 54.*

Leafy herbs, with densely-flowered, leafy spikes.—2 species, natives of Caffraria and Port Natal.

33. **HUTTONÆA**, Harv.

Perianth 2-labiate, the upper lip formed of the ovate, quite entire, flat sepals, of which the lateral are much the largest, united in a single piece by the bases of the claws of the petals. Petals with long claws, and a hood-shaped, fimbriate limb. Labellum free, flat, fimbriate. Anther resupinate; the cells

widely diverging at base. Glands nude. Stigma linear, transverse.—*Harv. Thes. t. 101.*

A caulescent plant, with cordate-ovate or roundish, membranous, many-nerved, subpetiolate leaves, sheathing at base, and a many-flowered spike. There are two varieties, one with snow-white, the other with purple and green flowers; both found on the frontier. This charming plant was discovered on the Katberg by Mrs. Henry Hutton, whose name it deservedly bears.

#### 34. HALLACKIA, Harv.

Perianth of *Huttonæa*, except that both sepals and petals are fimbriate. Labellum concave at base, fimbriate. Anther supine; the cells parallel, close-lying at base. Glands . . . Stigma . . .—*Harv. Thes. t. 102.*

An elegant plant, with the aspect of *Huttonæa*, from which it is known by the anther and the fimbriate sepals. The only specimens I have yet had for dissection are too imperfect to enable me to ascertain the exact structure of the stigma, etc. This plant was first sent to me by Mr. Hallack; but I believe first discovered by Mr. Fannin, of the Dargle, Natal, a fact which I did not know when I published it in *Thesaurus*.

#### 35. CERATANDRA, Eckl.

Perianth 2-labiate; the upper sepal and the petals united in a galea (which is mostly pendulous and anterior); the lateral spreading, free. Labellum clawed, lunate, adnate to the face of the column, nude or with a fleshy appendix. Column horseshoe-shaped. Anther resupinate; the cells distant, adnate to the stigmatic arms; glands nude. Stigma small, 3-lobed, vertical, in the fork of the arms.—*Lindl. Orch. p. 363.*

Leafy herbs, drying black. Leaves very narrow, dilated at base, clothing the whole stem. Roots fascicled, fleshy. Flowers in dense spikes, yellow.—5 or 6 species, in the Western districts.

#### 36. OMMATODIUM, Lindl.

Perianth 2-labiate; the upper sepal and the unequally-lobed concave petals united in a galea; the lateral spreading, free. Labellum hastate, sessile, adnate to the column, with a membranous, tubular appendix. Column membranous, truncate. Anther erect, with distant, subparallel cells, truncate at base; glands nude. Stigma horizontal, with incurved arms.—*Lindl. Orch. p. 365.*

A 2-3-leaved plant, with a many-flowered, elongate spike of rather small flowers. Nearly related to *Pterygodium*, but with a different anther.—Western district.

#### 37. PTERYGODIUM, Sw.

Perianth 2-labiate; the upper sepal and the very large, un-

divided, concave petals united in a galea, mostly posterior ; the lateral free, spreading. Labellum sessile, adnate to the face of the column, at base furnished with a large or small tongue-shaped, erect or inflexed appendix. Anther resupinate, the cells distant, short, adnate to the twisted, incurved stigmatic arms ; glands nude. Stigma linear, transverse, on each side produced into an arm.—*Lindl. Orch. p.* 366 ; *Harv. Thes. t.* 94.

Herbs, with leafy stems, oblong or ovate leaves sheathing at base, and solitary or racemose flowers. Flowers yellow white or greenish.—9 or 10 species, dispersed.

### 38. CORYCIUM, Sw.

Perianth hooded. Sepals membranous, narrow, the upper one either free or united with the petals into a galea ; lateral connate, spreading. Petals concave or saccate, unlike the sepals, fleshy. Labellum adnate to the face of the column, entire, either nude or more commonly with a large, simple or 2-lobed appendix. Anther dorsal, resupinate ; cells either near and parallel or very distant and diverging. Glands nude. Stigma narrow, between the base of the labellum and the connective ; rostellum 3-lobed.—*Lindl. Orch. p.* 368.

Leafy herbs, drying black. Leaves narrow, sheathing at base. Flowers small, dull-coloured, densely spiked.—6 or 7 species, dispersed.

### 39. DISPERIS, Sw.

Perianth hooded ; the upper sepal cohering with the petals into a galea ; lateral saccate, spreading, separate or connate. Labellum clawed, adnate to the face of the column, ascending between the lobes of the anther, with or without an appendix. Anther resupinate or supine ; glands nude. Stigma narrow, transverse, divaricate, with 2 often twisted arms.—*Lindl. Orch. p.* 369 ; *Harv. Thes. t.* 106, 148, 171, 172.

Herbs, variable in habit, with many- or few-leaved stems and solitary or spiked, greenish yellowish white purple or mottled flowers.—Many species, dispersed.

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## ORDER CXXIII. BURMANNIACEÆ.

Flowers bisexual, regular. Perianth superior, persistent, petaloid, tubular or bell-shaped, usually 6-lobed, the 3 inner lobes smaller or sometimes wanting. Stamens 3–6, included ; anthers 2-celled. Ovary inferior, 3-celled or with 3 parietal placentas, many-ovuled ; style single, with 3 stigmas. Fruit capsular. Seeds minute.—Herbs, with usually radical leaves,

and terminal flowers, solitary or in spikes, racemes, cymes or umbels. Chiefly tropical.

### 1. BURMANNIA, Linn.

Perianth terete or 3-winged, 6-fid. Stamens 3, opposite the inner lobes of perianth. Ovary 3-celled. Capsule 3-celled, incompletely 3-valved.

Leaves radical, numerous, grass-like. Scapes 1-2 ft., or bearing a 2-fid, many-flowered spike.—1 Cape species (*B. Capensis*) on record ; said to have 3-flowered scapes, and a 3-winged perianth. Unknown to me.

## ORDER CXXIV. DIOSCORIDEÆ.

Flowers unisexual, mostly diœcious. Perianth 6-lobed or divided. Stamens 6 or 3, inserted on the perianth, shorter than its lobes ; anthers 2-celled. Ovary inferior, 3-celled, with 2 pendulous ovules in each cell ; styles short, united or separate or 0 ; stigmas 3, entire or 2-fid. Fruit a berry or a 3-angled or winged capsule. Seeds albuminous, with a minute embryo.—Herbs, mostly with twining stems. Leaves simple or compound, with digitate or parallel nerves and netted veins. Flowers small, greenish, in axillary, simple or branched spikes or racemes.

### 1. DIOSCOREA, Linn.

Capsule 3-angled or winged, opening loculicidally at the angles. Seeds winged.—*Endl. Gen. n.* 1261.

A very large, chiefly tropical and subtropical genus, often having large, fleshy rhizomes or tubers ; such species constitute the various kinds of Yam, which are so important as esculents to mankind within the tropics. The South African species are numerous, especially in Caffraria and at Natal, and form two groups ; the *Testudinariæ* (or Tortoise-plants), which have over-ground, perennial, tessellated, hardshelled rhizomes ; these occur in the Eastern district and frontier ; and the Yams, properly speaking, which have large or small, mostly underground, tuberous rhizomes ; these are chiefly from Caffraria and Natal, though some grow within the frontier.

## ORDER CXXV. IRIDEÆ.

Perianth tubular, 6-parted, in two rows, often irregular. Stamens 3, distinct or monadelphous, opposite the outer segments of the perianth ; anthers 2-celled, opening outwards. Ovary inferior, 3-celled ; ovules numerous ; style 1 ; stigmas 3, dilated, often petaloid, sometimes 2-fid. Capsule 3-celled, 3-valved, loculicidal. Seeds numerous ; embryo cylindrical, in



fleshy or horny albumen.—Herbs with equitant leaves and brilliant flowers, rising from spathe-like bracts. Very numerous in South Africa; several of the adopted genera have very trivial characters, but are mostly natural groups of species.

1. Flowers either capitate, corymbose, or in thyrsi; each flower subtended by more than 2 bracts, or several flowers successively issuing from the sheath. Ovary generally pedicellate, rarely subsessile or sessile.

Stigmas expanded, petaloid.

Lobes of the stigma 2-fid.

Filaments distinct; inner perianth-segments narrow . . . . . 1. MORÆA.

Filaments connate; inner perianth-segments very narrow . . . . . 2. VIEUSSEUXIA.

Lobes of stigma pencil-multifid; filaments connate . . . . . 3. FERRARIA.

Stigmas not petaloid.

Perianth rotate, 6-parted . . . . . 4. ARISTEA.

Perianth tubular; limb 6-parted, spreading or erect . . . . . 5. WITSENIA.

2. Flowers in simple or branching spikes or solitary; each flower subtended by 2 distichous bracts. Ovary always sessile.

α. Flowers in few- or many-flowered spikes.

Stigmas 3, 2-fid or 2-parted.

Stigmas 2-fid; perianth-tube long and slender; limb spreading, subequal, one segment with a deep-coloured spot . . . . . 7. ANOMATHECA.

Stigmas 2-parted, with long slender lobes.

Flowers in loose, sometimes corymbose spikes, often secund . . . . . 6. OVIEDA.

Flowers in dense spikes, 2-ranked, the bracts imbricating . . . . . 11. WATSONIA.

Stigmas 3, cuneate or linear, but not 2-fid.

Stigmas more or less cuneate, expanded or folded.

Bracts herbaceous, brown-tipped; leaves plaited . . . . . 8. BABIANA.

Bracts herbaceous, taper-pointed; leaves rib-striate.

Perianth-tube gradually expanding into a ringent or subequal limb . . . . . 9. GLADIOLUS.

Perianth-tube suddenly expanding into a wide throat and ringent limb . . . . . 10. ANTHOLYZA.

Bracts membranous, either torn or subentire . . . . . 12. SPARAXIS.

Stigmas slender, filiform, often very long.

Perianth 6-parted, the segments taper-pointed. . . . . 15. DIASIA.

Perianth with a long or short tube; segments obtuse or acute, but not tapering.

Bracts scarious.

Bracts toothed; limb of perianth often unequal . . . . . 13. MONTBRETIA.

Bracts truncate, entire or subentire . . . . . 14. IXIA.

Bracts herbaceous.

Perianth with a longish tube and spreading limb.

- Flowers loosely spiked, dull-coloured,  
 opening in the evening . . . . . 16. *HESPERANTHA*.  
 Flowers densely spiked, brilliant, diurnal . . . . . 17. *SCHIZOSTYLIS*.  
 Perianth-funnel-shaped, with a short tube 18. *GEISSORHIZA*.  
*b.* Flowers solitary, on radical scapes, or radical, sessile.  
 Stigmas linear, 2-parted. (Scapes mostly obvious.) 19. *TRICHONEMA*.  
 Stigmas lamellar, fimbriate-multifid. (Flowers sessile.) . . . . . 20. *GALAXIA*.

### 1. *MORÆA*, Linn.

Perianth with a short tube, and 6-parted, equally-spreading limb, the 3 inner segments smaller, convolute after flowering. Filaments distinct. Style slender, 3-cornered; stigmas 3, petaloid, 2-3-fid. Capsule membranous, 3-cornered; seeds angular.—*Endl. Gen. n.* 1224.

Bulbous plants, resembling the *Irides* of the Northern hemisphere. Leaves mostly few and narrow. Flowers yellow white orange or parti-coloured, pedicellate, rising from crowded or subsolitary, terminal sheaths.—Many species.

### 2. *VIEUSSEUXIA*, Roche.

Perianth with the inner segments very small and narrow, otherwise as in *Moræa*. Filaments connate. Style, etc., of *Moræa*.—*Endl. Gen. n.* 1223.

Slender plants, with the habit of *Moræa*.—Several species.

### 3. *FERRARIA*, Linn.

Perianth 6-parted, the segments oblong, equally spreading, undulate; the outer wider. Filaments connate in a tube. Style filiform; stigmas 3, petaloid-dilated, converging, 2-fid, the lobes penicillate-multifid. Seeds with a fleshy coat.—*Endl. Gen. n.* 1230.

Bulbous plants, with ensiform, thick, nerved leaves, a simple or branched, densely-leafy stem, and aggregate floral bracts.—Few species, with curious, brown and spotted, very fugacious, pedicellate flowers.

### 4. *ARISTEA*, Soland.

Perianth rotate, 6-parted, the spreading segments subequal or the inner much larger. Filaments distinct, erect or subsecund. Style subclavate; stigmas 3, subcapitate or dilated. Capsules stipitate or sessile, prismatic. Seeds compressed.—*Endl. Gen. n.* 1232.

Small or tall plants, with tuberous or fleshy fascicled roots. Leaves sword-shaped, broad. Scape 2-edged, rigid, often branched. Spathes scarious or torn, rarely herbaceous, in tufts, either terminal or in compound

spikes or thyrsi. Perianth twisted after flowering. Flowers sky-blue or rarely white.

### 5. WITSENIA, Thunb.

Perianth tubular, the limb 6-fid, equal, spreading or converging. Stamens in the throat of the tube, included; filaments very short. Style filiform, exserted; stigma 3-toothed or very shortly 3-fid.—*Endl. Gen. n.* 1233.

Almost shrubby, simple or much-branched plants, with tuberous roots. Stem woody, 2-edged, rough with the bases of old leaves; branches ending in fan-like tufts of distichous, sword-shaped, nerved leaves. Peduncles simple or branched, often corymbose. Flowers blue.—Few species.

### 6. OVIEDA, Spreng.

Perianth funnel-shaped, with a short or long slender tube, and 6-parted, erect or spreading limb; the segments equal. Stamens in the throat, erect or subsecund; filaments subulate. Style filiform; stigmas 3, narrow-linear, conduplicate, 2-parted, with revolute lobes.—*Endl. Gen. n.* 1236.

Small, bulbous plants, with compressed or angular, simple or branching stems; gladiate or channelled leaves, often rigid, with rough edges, the lower ones falcate; and laxly spiked or corymbose flowers. Spathes herbaceous, with withered tips. Flowers blue or white.—Several species.

### 7. ANOMATHECA, Ker.

Perianth salver-shaped, with a long, slender tube, constricted in the throat; limb 6-parted; segments oblong, spreading, the 2 back ones nearer. Stamens in the throat, subsecund; filaments short. Style filiform; stigmas 3, narrow-linear, complicate, 2-fid. Capsule subglobose, somewhat rough with raised points.—*Endl. Gen. n.* 1237.

Bulbous plants, with ensiform leaves, a slender, rigid stem, and branching spikes of subsecund flowers. Flowers crimson, spotted.—1 or 2 species.

### 8. BABIANA, Ker.

Perianth-tube long or very long, gradually expanding into a funnel-shaped, nearly regular or a very irregular, ringent limb. Stamens in the throat, ascending. Style filiform; stigmas 3, cuneate, folded, entire. Capsule subovate.—*Endl. Gen. n.* 1238.

Bulbous plants, with spiked flowers and coarsely plaited, broad, mostly downy leaves. The perianth varies greatly in shape, being (as in *B. ringens*) sometimes extremely unequal, and in others nearly bell-shaped. Bracts 2, with a withered apex, the inner deeply 2-fid.—Several species, with blue purple red or white flowers.

### 9. GLADIOLUS, Tourn.

Perianth-tube curved, widening upwards; limb more or less

ringent or unequal, sometimes very unequal. Stamens and style ascending. Stigmas 3, cuneate-dilated, undivided.—*Endl. Gen. n.* 1239.

A large and widely-dispersed genus. Plants bulbous, variable in habit, densely-leafy, or slender with few leaves. Leaves broad and ribbed or narrow. Flowers spiked, often sweetly scented, yellow blue green brown white scarlet or variously shaded or mottled. Bracts herbaceous, generally taper-pointed.—Many Cape species.

#### 10. ANTHOLYZA, Linn.

Perianth with a slender, terete or compressed tube, suddenly swelling into a wide throat, which expands into a ringent limb, the upper segment elongate. Stigmas undivided. Capsules globose. Seeds large, roundish, not winged.

Tall, bulbous plants, with leafy stems and spiked scarlet flowers. Closely allied to *Gladiolus*, from which it chiefly differs in the seeds.—Several species.

#### 11. WATSONIA, Mill.

Perianth with a long or short, curved or straight tube, gradually widening upwards; limb tubular or bell-shaped, regular or subirregular. Stamens and style ascending. Stigmas 3, linear, 2-parted, the lobes filiform. Capsules oblong, coriaceous.—*Endl. Gen. n.* 1240.

Mostly large, often branching, leafy, bulbous plants, with densely-spiked mostly pink- or rose-coloured, rarely blue or purple flowers. Leaves ensiform, rarely inflated. Bracts scarious above.—The blue- or purple-flowered species (*W. spicata*, *triticea*, *plantaginea*, and *punctata*) form in themselves a natural group or genus, which Ecklon has called "*Beilia*."—Several species.

#### 12. SPARAXIS, Ker.

Perianth-tube short, widening into a funnel- or bell-shaped, subregular or rarely ringent, very unequal limb. Stamens erect, ascending, included. Stigmas 3, narrow wedge-shaped, channelled, entire. Capsules membranous.—*Endl. Gen. n.* 1241.

Plants with reticulated, thickly-coated bulbs, broad, ensiform leaves, and flexuous or zigzag scapes. Flowers distant, large and very handsome, variously and brilliantly coloured. *S. pendula* differs from the rest in habit. Bracts scarious, membranous, lacerated or rarely entire.—Many species.

#### 13. MONTBRETIA, DC.

Perianth with a narrow, often very long tube, gradually widening into a bell-shaped or salver-shaped, rarely subringent limb. Stamens ascending. Stigmas 3, narrow, long, entire or subentire. Capsules coriaceous.—*Endl. Gen. n.* 1242. *Tritonia*, Ker.

Bulbous plants, allied on one side to *Gladiolus*, on the other to *Ixia*; known from both by the scarious, toothed (not lacerate) bracts.—Many species.

14. **IXIA**, Linn.

Perianth with a long, slender tube, and regular, salver-shaped limb. Stamens in the throat, free or monadelphous, spreading or declined. Stigmas 3, narrow-linear, recurved. Capsules membranous.—*Endl. Gen. n.* 1243.

Bulbous plants, chiefly leafy at base, with slender, wiry stems, bearing simple or branched spikes of gaily-coloured flowers.—Many species.

15. **DIASIA**, DC.

Perianth 6-parted to the base, equal, spreading, segments taper-pointed. Stamens ascending. Stigmas 3, narrow-linear, recurved. Capsules turbinate. Seeds few, subglobose.—*Endl. Gen. n.* 1244.

Bulbous plants, with weak stems, ensiform, thin, pale-green leaves, and greenish-yellow, spiked flowers. Bracts subherbaceous.—2 species, found in woods or damp, shady places.

16. **HESPERANTHA**, Ker.

Perianth salver-shaped; limb equalling the slender tube, the segments equal, spreading. Stamens on the tube, erect or spreading. Style filiform; stigmas filiform, very long, spreading. Capsules oblong. Seeds rugose.—*Endl. Gen. n.* 1245.

Bulbs with few, sword-shaped or curled leaves, and laxly spiked, dull coloured flowers, opening in the evening and very sweetly scented. Bracts herbaceous, entire, one of them as long as the tube of the perianth or longer.—Colonial name "Avond-bloomjes."—Several species.

17? **SCHIZOSTYLIS**, Baekh.

Floral characters as in *Hesperantha*, but the flowers are diurnal, densely spiked, and the root is stoloniferous. Seeds obtusely angled, not margined.

A very beautiful plant, with bright crimson or clear pink flowers, and tufted leafy stems 3 feet high, has been figured in the Bot. Mag. t. 5422 under the name *Schizostylis coccinea*, but, though extremely different in aspect from *Hesperantha*, it cannot be said to differ by any tangible generic character yet observed. It grows on mountains in the Eastern frontier, in Caffreland, and at Natal.

18. **GEISSORHIZA**, Ker.

Perianth funnel-shaped, with a short tube, and ample, equally 6-parted, erecto-patent limb. Stamens erect, free. Style declined; stigmas 3, elongate, linear, undivided. Capsules membranous. Seeds minute.—*Endl. Gen. n.* 1246.

Small, bulbous plants, with secund spikes of brightly-coloured, generally blue or blue and crimson flowers. Bracts herbaceous or slightly withered at the tip. Leaves few, falcate or linear.—Several species.



## 19. TRICHONEMA, Ker.

Perianth with a short (very rarely a long) tube, funnel-shaped, the limb 6-parted; segments equal, spreading. Stamens on the tube; filaments included. Stigmas 3, linear, 2-parted; segments recurved. Capsule membranous. Seeds many, roundish.—*Endl. Gen. n.* 1247.

Stemless, bulbous plants, with long, linear, grass-like radical leaves, and simple scapes, bearing solitary, purple yellow white or particoloured flowers.—Several species.

## 20. GALAXIA, Thunb.

Perianth with a very long, slender tube and an equally 6-parted, funnel-shaped, spreading limb. Filaments connate in a short tube. Stigmas 3, lamellar, fimbriate-multifid.—*Endl. Gen. n.* 1235.

Stemless plants, with very fugacious, yellow or purple flowers. Ovary concealed underground, the long tube resembling a peduncle.—2 species, *G. ovata*, with broad, ovate-oblong, ciliate leaves, and *G. graminifolia*, with linear, channelled, grass-like leaves. Common on dry ground in winter.

## ORDER CXXVI. HÆMODORACEÆ.

Perianth tubular, coloured (at least) within, on the outside often woolly or hairy, either adnate at base to the ovary or free, the limb 6-parted, subequal or unilabiate. Stamens 6, inserted at the base of the segments, or 3 fertile and 3 (opposite the outer perianth-lobes) barren or altogether wanting; anthers introrse, 2-celled. Ovary inferior or superior, composed of 3 carpels, 3-celled (very rarely of 1 carpel and 1-cell); ovules 1-2 or many, peltate; style continuous with the ovary, simple; stigma undivided. Capsule often crowned with the perianth, 3-(1-)celled, loculicidal. Seeds with hard albumen.—Perennial herbs, with tufted, fibrous roots (often with red juice), simple or branched stems or scapes only, alternate, mostly distichous, entire, ensiform and equitant leaves, and racemose or corymbose, pedicellate flowers. Native of the Cape, New Holland, and North America.

Ovary inferior; perianth externally downy or woolly.

Fertile stamens 3, of which 1 has a very large

anther . . . . . 1. DILATRIS.

Fertile stamens 6, similar . . . . . 2. LANARIA.

Ovary superior; perianth externally glabrous.

Perianth subirregular; ovary sharply 3-angled, 3-celled, with a terminal style . . . . . 3. WACHENDORFIA.

Perianth regular; ovary oblique, 1-celled, with a lateral style . . . . . 4. BARBERETTA.

1. **DILATRIS**, Berg.

Perianth petaloid, externally downy, superior, 6-parted, the segments erect, persistent. Stamens 6, 3 sterile, antherless and short, 3 fertile, one of the anthers much larger than the others. Ovary inferior, 3-celled; ovules 1 in each cell, peltate. Capsules subglobose. Seeds solitary.—*Endl. Gen. n. 1254.*

Roots with blood-red juice; leaves radical, equitant, ensiform, rigid, sheathing at base. Flowers purple or yellow, corymbose or paniced.—3 species, Western.

2. **LANARIA**, Thunb.

Perianth petaloid, externally plumose-woolly, superior, with a short tube, and 6-parted, spreading, equal, persistent limb. Stamens 6, all fertile; anthers versatile. Ovary inferior, 3-celled; ovules 2 in each cell, ascending.—*Endl. Gen. n. 1256.*

*L. plumosa*, the only species, has a branched, woolly stem, glabrous, ensiform leaves, and paniced flowers, which are white-woolly on the outer, purple on the inner surface.—Grows in Swellendam.

3. **WACHENDORFIA**, Burm.

Perianth petaloid, villous, 6-parted, irregular, the segments oblong, the 3 upper erect, 3 lower spreading, subsaccate at base. Stamens inserted in the base of the perianth, 3 fertile, 3 antherless, short or wholly wanting; filaments of fertile stamens declined, rather shorter than the perianth. Ovary free, sharply 3-cornered, 3-celled; ovules solitary; style filiform, terminal. Capsule turbinate, sharply 3-angled.—*Endl. Gen. n. 1251.*

Tuberous-rooted, red-juiced plants, with radical, sheathing, nerve-plaited leaves, pubescent stems, and dull yellowish, racemose or paniced flowers, brownish on the outside.—Several species, in the Western districts.

4. **BARBERETTA**, Harv.

Perianth petaloid, 6-parted, regular, the segments oblong, 3-5-nerved, very delicate. Stamens 3, in the base of the perianth, ascending; filaments subulate, with narrow wings; anthers incumbent, 2-celled. Ovary oblique (of 1 carpel), roundish-compressed, sessile on a fleshy disk, free; ovule solitary; style lateral, filiform, exserted; stigma simple. Capsule?

Roots tuberous? Leaves radical, equitant, sheathing at base, many-nerved. Scapes simple, racemose. Bracts 1 to each flower, spathe-like, wrapping the pedicel. Flowers small, bright golden-yellow.—*B. aurea*,

H., the only species, was discovered on the Isomo river, Caffraria, by Mr. Henry Bowker and Mrs. F. W. Barber, and the genus is dedicated to the latter in gratitude for her many discoveries of new plants in the frontier districts. With the foliage of *Wachendorfia*, it has very different flowers and ovary.

## ORDER CXXVII. AMARYLLIDEÆ.

Perianth superior, petaloid, regular or subirregular, 6-cleft, the outer segments overlapping the inner. Stamens 6 (rarely more), inserted on the perianth, sometimes cohering by their dilated bases into a cup (or corona); anthers opening inwards. Ovary inferior, 3-celled; ovules rarely definite; style 1; stigma 3-lobed or subentire. Fruit either a 3-celled, loculicidal capsule or a berry. Seeds albuminous.—Generally bulbous rooted plants, stemless or caulescent, with ensiform leaves, and handsome, liliaceous flowers. This Order differs from *Liliaceæ* by the inferior ovary. I here adopt Mr. Herbert's genera, but many of them have very trivial distinctive characters.

Suborder 1. **Amaryllideæ veræ.** Bulbous- or rarely fibrous-rooted. Leaves radical. Scapes umbelliferous, rarely 1-flowered. Perianth completely petaloid. Seed-coat not crustaceous. (Gen. 1-18.)

(1) Perianth with an evident tube and 6-parted limb.

Perianth furnished in the throat with a tubular, 6-lobed corona, bearing stamens between its lobes . . . . . 17. **PANCRATIUM.**

Perianth destitute of corona.

(a) Scape rising above the soil, bearing an umbel.

Scape hollow within.

Perianth funnel-shaped, the slender tube gradually widening into a spreading limb . . . . . 1. **VALLOTA.**

Perianth cylindrical-funnelshaped, with an erect or erecto-patent limb . . . . . 2. **CYRTANTHUS.**

Perianth-tube slender below, bell-shaped above, the limb reflexed . . . . . 3. **CYPHONEMA.**

Scapes solid (often compressed).

Lobes of perianth 1-3- or 5-nerved, narrow.

Spathe of several leaves; stamens erect, 3 shorter; style straight . . . . . 7. **HÆMANTHUS.**

Spathe 2-leaved; stamens subequal, spreading; style inclined . . . . . 9. **BUPHANE.**

Lobes of perianth many-nerved, broad. Perianth-tube long and slender, not much wider in the throat . . . . . 4. **CRINUM.**

Perianth-tube very short; limb funnel-shaped, with undulate, spreading lobes . . . . . 8. **AMARYLLIS.**

- Perianth-tube widening upwards,  
trumpet-funnel-shaped,  
Segments flat, subequal; pedicels elongate . . . . . 10. BRUNSVIGIA.  
Segments convolute at base, 3  
smaller; pedicels shortish . . . . . 11. AMMOCHARIS.
- (b) Scape 1-flowered and ovary concealed  
under ground; perianth-tube filiform,  
very long, scape-like; limb spreading;  
stamens 6, 12 or 18 . . . . . 18. GETHYLLIS.
- (2) Perianth 6-parted to the base or nearly so.  
Very imperfectly bulbous- or fibrous-rooted  
plants.  
Perianth funnel-shaped, nodding; segments  
green-tipped; stamens slightly exerted;  
style erect . . . . . 5. CLIVIA.  
Perianth widely bell-shaped; segments broad,  
1-coloured; stamens shorter than seg-  
ments; style curved down then turning up . . . . . 6. IMANTOPHYLLUM.
- Perfectly bulbous-rooted plants.  
Perianth deciduous; style filiform, not swoll-  
en at base.  
Anthers middle-fixed, versatile; filaments  
very long . . . . . 12. NERINE.  
Anthers basifixed, erect.  
Filaments separate, decurrent on the  
short tube . . . . . 15. CARPOLYZA.  
Filaments united into a cup at base . . . . . 16. HESSEA.
- Perianth persistent; style swollen at base.  
Stamens connate at base and adnate to  
the swollen base of style . . . . . 13. STRUMARIA.  
Stamens dilated at base but free from base  
of style . . . . . 14. IMHOFIA.
- Suborder 2. **Hypoxidæ.** Bulbous- or fibrous-rooted. Scapes 1- or  
many-flowered, not umbelliferous. Leaves often striate or plaited. Perianth  
often discoloured or rough and hairy on the outer surface. Capsule long in-  
dehiscent, at length splitting. Seeds with a black, hard coat. (Gen. 19-21.)  
Perianth with a long, slender, scape-like tube; sta-  
mens 6 . . . . . 19. CURCULIGO.
- Perianth 6-parted nearly to the base, persistent.  
Stamens 6, epigynous . . . . . 20. HYPOXIS.  
Stamens 3, opposite the inner segments of perianth . . . . . 21. PAURIDIA.

# SUBORDER 1. **Amaryllidæ.** (Gen. 1-18.)

## 1. **VALLOTA,** Herb.

Perianth funnel-shaped, 6-fid, subregular, with a straight,  
slender tube gradually widening in the throat. Stamens 6,  
those opposite the inner segments on the summit of the tube,  
those opposite the outer segments inserted lower down, all  
decurrent, subequal, spreading; anthers incumbent. Style  
declined; stigma subcapitate, 3-lobed. Capsule 3-angled.

Seeds compressed, black, winged.—*Kunth, Enum. v. p. 531; Bot. Mag. t. 1430.*

A handsome bulbous plant. Leaves distichous, linear-strapshaped, appearing with the flowers. Scape fistular, bearing a few-flowered umbel. Spathe 2-leaved; flowers pedicellate, about 3 in the spathe, bright scarlet.—Eastern district.

## 2. CYRTANTHUS, Ait.

Perianth tubular-funnelshaped, with an erect or spreading, 6-fid, subequal limb, the inner lobes wider; tube straight or curved. Stamens 6, inserted above the middle of the tube, straight or deflexed, included, the alternate longer; anthers incumbent. Style erect or declined, exserted; stigma slightly 3-lobed. Capsule 3-angled. Seeds compressed, black.—*Kunth, Enum. v. p. 533; Bot. Mag. t. 271, 1133, 2471, 2634, 2291, 3779, 5374.*

Bulbous plants, of which there many species in the Eastern district and at Natal. Leaves flat or channelled, linear. Scape fistular; spathe 1- or many-flowered. Flowers pedicellate, often pendulous or cernuous, scarlet yellow or white, rarely striped.

## 3. CYPHONEMA, Herb.

Perianth with a straight tube, slender and cylindrical below, bell-shaped above; limb regular, reflexed. Filaments incurved, the sepaline in the middle of the tube, the petaline inserted higher. Style slender; stigma 3-lobed.—*Kunth, l. c. 541.*

*C. Loddigesianum*, Herb., is a bulbous plant, with a solitary, vernal leaf and a 2-flowered, autumnal, hollow scape. Flowers whitish, striped with green,  $1\frac{3}{4}$  inches. Pedicels erect.

## 4. CRINUM, Linn.

Perianth-tube long and slender, not much widening in the throat; limb 6-parted; segments subequal, many-nerved, erect, spreading or reflexed. Stamens on the summit of the tube, elongate, spreading or declined; anthers versatile, incumbent. Style erect or declined; stigma obtuse. Capsule membranous, depressed, irregularly bursting, few-seeded. Seeds angular-globose, often viviparous.—*Kunth, l. c. 547; Bot. Mag. t. 2352.*

Bulbous plants. Leaves multifarious. Scape solid, many-flowered.—3 Cape species, Eastern.

## 5. CLIVIA, Lindl.

Perianth with a short tube, funnel-shaped, subequally 6-parted, the inner lobes a little longer. Stamens on the summit of the tube, erect, slightly exserted; anthers fixed above



the base. Ovary few-ovuled; style exserted, erect; stigma 3-lobed. Berry few-seeded. Seeds subglobose-compressed, with a fleshy coat.—*Kunth, l. c.* 584; *Bot. Mag.* (*Imantophyllum Aitoni*) *t.* 2856.

A very imperfectly bulbous plant, the base throwing out many tufted, thick and fleshy fibres. Leaves numerous, radical, distichous, strap-shaped, rigid, persistent. Scape plano-convex, solid, umbellately many-flowered; spathe of several bracts. Flowers pedicelled, nodding, orange-scarlet, green-tipped.—*C. nobilis*, the only species, grows in the Eastern districts.

### 6. IMANTOPHYLLUM, Hook.

Perianth 6-parted nearly to the very base, widely campanulate, the segments broadly obovate-lanceolate, subequal, the 3 inner rather larger. Stamens inserted near the base of the segments and somewhat shorter, spreading; anthers versatile. Ovary few-ovuled; style thick, curved down, then turning upwards, longer than the perianth. Berry fleshy, few-seeded. Seeds subglobose, bulbiform.—*Bot. Mag. t.* 4783.

*I. miniatum*, Hook., has the habit of *Clivia*, but its leaves are much larger and broader, less rigid, with ample clasping bases and acute apices, and the flowers are erect or cernuous, opening widely, nearly as in *Vallota*, orange-scarlet, without green tips.—Native of Natal.

### 7. HÆMANTHUS, Linn.

Perianth with a straight tube, and deeply 6-parted limb, deciduous, the lobes narrow, 1-3-nerved, equal, erect or spreading. Stamens on the summit of the tube, erect, exserted, 3 longer; anthers fixed above the base. Ovary few-ovuled; style filiform, straight; stigma simple. Berry globose or oblong, 1-2-celled. Seeds solitary, bulb-like.—*Kunth, l. c.* 586; *Bot. Mag. t.* 1315, 3373, 1239, 1523, 1075, 1705, 5378, 5532.

Bulbous plants, glabrous or hairy. Leaves few, mostly 2, mostly broad and short, coriaceous, thickish, erect or prostrate, rarely long, narrow and channelled. Scape short, mostly compressed or flat, often mottled or banded; umbel densely many-flowered. Spathe mostly many-leaved, rarely 2-leaved.—Many species, dispersed.

### 8. AMARYLLIS, Linn.

Perianth with a very short tube, funnel-shaped, 6-parted, subregular or irregular; segments many-nerved, broad, undulate, spreading, somewhat revolute at the apices. Stamens at the summit of the tube, unequal, declined; anthers fixed by the middle, incumbent, curved into a circular arch after bursting. Style declined; stigma thickened, sub-3-lobed. Capsule obovate. Seeds globose, fleshy.—*Kunth, l. c.* 600; *Bot. Mag. t.* 733, 1450, 2253.

Fine bulbous plants. Leaves appearing at a different season from the

scapes, numerous, strap-shaped. Scape tall, solid, compressed; spathe 2-leaved; umbel few-flowered. Flowers large, sweet-scented, pedicelled, rosy-white.—*A. Belladonna*, Linn., is well known in cultivation.

### 9. BUPHANE, Herb.

Perianth with a short, straight tube and 6-parted, regular limb, deciduous, the segments narrow, 3-5-nerved, widely funnel-shaped, reflexed above, subequal. Stamens in the throat, decurrent, spreading, subequal; anthers oblong, fixed by the middle, straight after bursting. Ovules few; style filiform, inclined; stigma subsimple. Capsule turbinate, depressed, membranous, few-seeded. Seeds bulb-like.—*Kunth, l. c. 602.*

Plants with large, coated bulbs. Leaves appearing after the flowers, several, strap-shaped, elongate. Scape compressed, short; umbel densely many-flowered; spathe 2-leaved. Flowers pedicelled, erect, mixed with filiform bracts.—4 species, of which the poisonous *B. toxicaria* is the best known: habit of *Hæmanthus*.

### 10. BRUNSVIGIA, Gawl.

Perianth with an evident, longer or shorter tube, curving upwards, funnel-shaped, deeply 6-parted, deciduous; segments subequal, many-nerved, flat, recurved at the apex. Stamens on the tube, much curved upwards; anthers versatile, straight. Ovules numerous; style curving with the stamens; stigma truncate. Capsule 3-angled, membranous. Seeds few, subglobose, black-coated.—*Kunth, l. c. 605; Bot. Mag. t. 2578.*

Plants with large bulbs, popularly “Candelabra Flowers.” Leaves broad, horizontal. Scape appearing in summer without the leaves; umbel many-flowered; flowers on very long pedicels, red. Spathe 2-leaved.—Several species, dispersed.

### 11. AMMOCHARIS, Herb.

Perianth with a tube widening upwards and a 6-parted regular limb; segments many-nerved, flat, convolute at base, spreading-recurved, the alternate smaller. Stamens adnate nearly to the base of the lobes, declined, then curving upwards; anthers short, middle-fixed. Ovary many-ovuled; style curved like the stamens; stigma obtuse. Capsule turbinate.—*Kunth, l. c. 611; Bot. Mag. t. 1443.*

Bulbous plants. Leaves vernal, linear-ensiform, not tubular at base. Scape compressed, solid; umbel many-flowered. Spathe 2-leaved. Flowers pedicelled, suberect.—3 species.

### 12. NERINE, Herb.

Perianth-tube scarcely any; limb very deeply 6-parted, regular or 2-labiate, deciduous; segments narrow, 3-nerved,

subequal, undulate, spreading-recurved. Stamens in the throat, very long, erect or declined; anthers fixed by the middle, versatile, straight. Style filiform; stigma 3-fid. Capsule subglobose, membranous. Seeds few, angular.—*Kunth, l. c. p. 615*; *Bot. Mag. t. 725, 294, 2124, 2407, 726, 1089, 369.*

Bulbous plants. Leaves narrow strap-shaped, appearing after the flowers. Scape solid; umbel few- or several-flowered; spathe 2-leaved. Flowers pedicelled, of moderate size, scarlet or pink.—Several species, of which *N. Sarniensis* (the Guernsey Lily) is common about Table Mountain.

### 13. STRUMARIA, Jacq.

Perianth-tube very short; limb deeply 6-parted, regular, persistent; segments subequal, 3-nerved, spreading widely. Stamens mostly connate at base, adnate at base to the style; anthers fixed at back, incumbent. Ovary many-ovuled; style filiform, erect, with a swollen, fleshy base; stigma 3-fid. Capsule membranous, few-seeded.—*Kunth, l. c. p. 622.*

Small but elegant bulbous plants. Leaves appearing with the flowers, linear or strap-shaped. Scape solid; umbel many-flowered; spathe 2-leaved; flowers pedicelled, erect, white or rosy.—6 species, as here restricted.

### 14. IMHOFIA, Herb.

Perianth and other characters as in *Strumaria*, but stamens inserted in the base of the perianth, their filaments dilated at base but separate, free from the style or slightly united to its base. Style much thickened at base.—*Kunth, l. c. p. 625*; *Bot. Mag. t. 1620.*

Habit of the last genus, from which this scarcely differs. Leaves filiform.—4 species.

### 15. CARPOLYZA, Salisb.

Perianth-tube short, widening upwards; limb 6-parted, regular, deciduous; segments 3-nerved, the outer rather wider, mucronate beneath the lip. Stamens in the throat, 3 longer than the others; filaments decurrent; anthers emarginate, fixed at back scarcely above the 2-fid base, erect. Ovary few-ovuled; style filiform (not swollen at base), erect; stigma 3-parted, the segments filiform, patent-recurved. Capsule membranous, few-seeded. Seeds bulb-like.—*Kunth, l. c. p. 629*; *Bot. Mag. t. 1383.*

*C. spiralis* (*Hessea spiralis*, Berg) is a small but very elegant bulbous plant, found in wet places, flowering in April and May. Scapes filiform; 4-6 inches high, spirally-twisted from the base to the middle, thence straight; umbel 2-4-flowered; spathe 2-leaved. Leaves spiral, filiform. Flowers white.

16. **HESSEA**, Herb., not Berg.

Perianth-tube very short; limb 6-parted, regular, deciduous?; segments narrow, subequal, very widely spreading. Stamens united into a cup at base, erect, at length reflexed; anthers elliptic, fixed by their cordate base, erect. Style filiform, erect, free at base; stigma 3-fid; ovules 1-2 in each cell. Seeds subglobose.—*Kunth, l. c. p. 630.*

Small, bulbous plants, separated from *Strumaria*. Leaves linear, appearing with the flowers. Scape solid; umbel several-flowered; spathe 2-leaved. Flowers on long pedicels, rosy or white.—*H. crispa* is the commonest of the 4 or 5 known species.

17. **PANCRATIUM**, Linn.

Perianth persistent, with a long, straight tube, widening into a funnel-shaped throat; limb 6-parted; segments many-nerved, subequal, spreading. Corona turbinate-funnel-shaped, 6-lobed, adnate to the limb, staminiferous between the entire or 2-fid lobes. Stamens 6, erect, equal; filaments subulate, decurrent; anthers incumbent. Ovary many-ovuled; style filiform, ascending; stigma capitellate, entire. Capsule membranous. Seeds subglobose.—*Kunth, l. c. p. 657.*

Bulbous plants, often growing near the sea. Specimens of a very singular new species of this genus (*P. Chapmanni*, Harv.) have recently been sent me from Damaraland by Mr. Chapman and Mr. Baines. It has a bulbous root, about 1 in. long,  $\frac{3}{4}$  in. diameter. The leaves are very slender, linear, like those of *Gethyllis*, and the scape 3-4 inches high, bears a solitary, subsessile flower, subtended by 2 small bracts. The flower is large, white and very delicate, and the generic characters quite those of a *Pancratium*.

18. **GETHYLLIS**, Linn.

Perianth-tube filiform, very long, slender; limb 6-parted, spreading. Stamens in the throat, 6-12-18; filaments subulate, free or connate at base in parcels of 2 or 3; anthers linear, fixed by the sagittate base, erect, straight or spirally-twisted at tip. Ovary 3-celled; cells very many-ovuled; style connate below with the tube of the perianth, above free and exserted; stigma capitate. Berry succulent, elongate, club-shaped. Seeds very numerous, subcompressed, lying in pulp.—*Kunth, l. c. 694; Bot. Mag. t. 1088.*

Small, bulbous plants, with linear, spirally-twisted leaves, appearing at a different season from the flowers. Scape 1-flowered, very short, hidden (with the ovary) underground, the long tube of the corolla resembling a scape. Spathe 1-leaved, membranous; flowers sessile, white, delicate and soon withering. The fruit rises above ground to ripen, and is strongly scented. It is known to colonial children by the name "Kukumakranka."—8 species are enumerated, but the number is probably overrated.

SUBORDER 2. **Hypoxideæ.** (Gen. 19-21.)19. **CURCULIGO**, Gært. n.

Perianth-tube very long and slender; limb 6-parted, spreading, deciduous. Stamens 6, exserted. Ovary many-ovuled; style connate with the long tube of the perianth, free above; stigmas 3. Berry oblong, few-seeded.—*Endl. Gen. n.* 1263; *Bot. Mag. t.* 1076, *etc.*

Our only species (*C. plicata*) is a small bulbous plant, with radical, lanceolate, plaited leaves, gradually lengthening as the flowers wither, and solitary, radical, yellow flowers, the ovary remaining under ground, while the perianth-tube resembles a scape. It is common on dry hills in the winter months.

20. **HYPOXIS**, Linn.

Perianth 6-parted to the base, spreading, star-like, persistent. Stamens 6, epigynous. Ovules numerous; style short, thick, single; stigmas 3. Capsule 3-celled, many-seeded, crowned with the marcescent perianth, which at length falls off, carrying with it the top of the capsule, this then bursts into 3 valves and scatters the seeds. Seeds numerous.—*Endl. Gen. n.* 1264; *Bot. Mag. t.* 662, 709, 1223, *etc.*

Bulbous- or tuberous-rooted plants, with radical, glabrous or hairy, broad or narrow leaves. Scapes 1- or many-flowered, simple or branched. Flowers white or yellow, opening in bright sunlight, star-like and often handsome.—Many species, throughout the colony; the larger, hairy kinds, with many-flowered scapes, are chiefly from the Eastern frontier and Natal.

21. **PAURIDIA**, Harv.

Perianth campanulate or spreading, deeply 6-parted, regular, persistent; tube wide and short. Stamens 3, inserted on the perianth, opposite the inner segments, at their base; anthers opening laterally. Style deeply 6-parted (nearly to its base), 3 segments very short, recurved, channelled, 3 long, linear, erect, connivent or slightly spreading. Capsule crowned with the perianth, long indehiscent (as in *Hypoxis*). Seeds many, globose, with a black, granulated skin.—*Harv. Gen. S. Afr. Plants, ed. 1. p.* 342.

*P. hypoxidioides*, Harv. (*Ixia minuta*, Harv.), the only species, is a minute, bulbous plant, common in April and May about Capetown. Leaves many, radical, spreading every way, subulate and channelled. Scapes 1-2 inches high, 1-2-flowered; flowers white. Pedicels deflexed, on the withering of the flowers. The structure of the style is very peculiar.

ORDER CXXVIII. **ALISMACEÆ.**

Flowers bisexual or monœcious. Perianth usually 6-parted in two rows, the inner segments usually petaloid and deciduous, rarely both persistent; sometimes of 2 sepals only or 0.



Stamens 6-18 or indefinite, hypogynous; anthers 2-celled. Carpels 3-6 or many, altogether separate or more or less cohering; ovules 1-2-5 or indefinitely numerous, erect or ascending. Fruit dry, either 1-seeded nut-like and indehiscent, or 2-many-seeded follicular and opening by the ventral suture. Seeds exalbuminous.—Water or marsh plants, erect or floating, stemless or caulescent.

Water plants, with long petioled, oblong floating leaves ;  
 flowers white, in simple or 2-fid, floating spikes . . . 1. APONOGETON.  
 Marsh plants, with channelled, grassy leaves ; flowers  
 green, in erect spikes . . . . . 2. TRIGLOCHIN.

### 1. APONOGETON, Thunb.

Flowers bisexual. Sepals 2, coloured, persistent. Stamens 6-18; filaments subulate, persistent; anthers 2-celled. Carpels 3-5, erect, beaked; stigma oblique, minute; ovules 2-6, basifixed, ascending. Follicles 3-4, opening inwards, 1-3-seeded. Seeds erect, exalbuminous.—*Edgw. in Hook. Lond. Journ. Bot.* 1844. p. 404.

Water plants, with tuberous, esculent roots; radical, long-petioled, floating, oblong or lanceolate, many-nerved leaves; and long, floating or suberect scapes, bearing 1 or 2 dense spikes of white, sweetly-scented flowers. The tops of the flowering-stalks, boiled or stewed, are eaten.—About 3 species, dispersed; *A. distachyon* (Water Uintjes) is the commonest.

### 2. TRIGLOCHIN, Linn.

Flowers bisexual. Perianth 6-parted; segments concave. Filaments very short; anthers roundish-elliptical, emarginate, extrorse. Carpels 6, the alternate ones sometimes sterile and rudimentary; ovules solitary; stigmas as many as the fertile carpels, sessile, plumose.—*Kunth Enum.* iii. p. 142.

Marsh plants, with narrow, channelled, radical leaves, and simple scapes. Flowers small, green, minutely pedicelled, in dense spikes.—3 species, of which 2, *T. maritimum* and *T. palustre*, are common to Europe.

## ORDER CXXIX. NAIADÆÆ.

Flowers mostly monœcious or diœcious, rarely bisexual. Perianth often 0; when present, 2-4-parted, herbaceous. Stamens 1-4, hypogynous; anthers sessile or on a filament, 1-2-4-celled. Carpels sessile, rarely stipitate, 1-ovuled; ovule erect or pendulous; style 1 or 0; stigmas 1-3. Fruit more or less dry, indehiscent, 1-seeded. Seed without albumen.—Water plants, mostly floating, with delicately cellular leaves; some are marine.

Fresh-water or salt-marsh plants.

- |   |                  |
|---|------------------|
| Flowers in dense, many-flowered spikes; perianth 4-parted; stamens 4 . . . . .          | 1. POTAMOGETON.  |
| Flowers 2 or more on a slender spadix; perianth 0; stamens 2 . . . . .                  | 2. RUPPIA.       |
| Flowers solitary and sessile in the axils of the leaves; perianth 0; stamen 1 . . . . . | 3. ZANNICHELLIA. |
| Marine, submerged in the sea.   |                  |
| Spadix flat, bearing anthers and ovaries in a double row, on its upper side . . . . .   | 4. ZOSTERA.      |

### 1. POTAMOGETON, Linn.

Flowers bisexual. Perianth 4-parted. Stamens 4, opposite the parts of the perianth; anthers subsessile, 2-celled, extrorse. Carpels 4; style short or 0; stigma oblique. Nuts 4, distinct.—*Kunth, l. c. p. 127; Endl. Gen. n. 1664.*

Caulescent, aquatic, submerged or floating plants. Leaves alternate, very rarely opposite, stipulate. Stipules connate, separate from the petiole or leaf, rarely joined with the petiole in a sheath. Spikes spadix-like, pedunculate, nude, terminal or axillary.—*P. natans*, a nearly cosmopolitan species, is found in the colony.

### 2. RUPPIA, Linn.

Flowers bisexual, 2 or more sessile on a filiform, axillary spadix, at first included in the leaf-sheath, then exerted. Perianth 0. Stamens 2, opposite; filaments very short, scale-like; anthers large, extrorse, 2-celled, cells parallel, distinct, easily separating. Carpels 4, free, keeled at back, gradually becoming stalked. Drupes 4 or fewer, on long stalks, compressed, gibbous, crowned with the sessile, discoid stigma.—*Kunth, l. c. p. 122; Endl. Gen. n. 1661.*

*R. maritima* is a small submerged plant, growing in estuaries or sometimes in fresh or brackish water, near the sea. It has much the aspect of *Zannichellia*, but different floral characters. I gathered it in 1838 in a "Vley," near the Lighthouse, Greenpoint; fruiting in December.

### 3. ZANNICHELLIA, Mich.

Flowers monœcious or polygamous (male and bisexual), solitary in the axils of the leaves, sessile. Perianth 0. Male: Stamen 1; filaments filiform; anthers 2-celled, cells divergent at base. Hermaphrodite: Stamen 1, lateral. Carpels 4, free, convex-backed, sessile, with a short cup-like sheath at base; ovule solitary, pendulous; style short; stigma peltate, disk-like. Nuts 4, subsessile or stipitate, obliquely oblong, compressed, beaked with the persistent style, more or less toothed or crested at back.—*Kunth, l. c. p. 123; Endl. Gen. n. 1662.*

*Z. palustris* is a small, much-branched, submerged plant. Leaves scattered, narrow-linear, flat. Stipules broad, amplexicaul.—Found in ponds, etc., in various parts of the colony; and in most parts of the world in similar situations.

#### 4. ZOSTERA, Linn.

Flowers monœcious. Spathe longitudinally splitting from the lower part of the leaf, produced into a lamina above. Spadix plano-compressed, membranous, nude at back, in front covered with alternately 2-seriate stamens and ovaries. Anthers oblong, subsessile, 1-celled; pollen confervoid. Carpels fewer than the anthers, 1-celled; style subulate, persistent; stigmas 2, capillary. Utricles membranous.—*Kunth, l. c. p. 115; Endl. Gen. n. 1659.*

*Z. marina* (Sea-Grass) grows in the sea, on sandy shores all over the world. Root creeping. Leaves linear, obtuse.

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### ORDER CXXX. AROIDEÆ.

Flowers unisexual, rarely bisexual, sessile on or sunk in a spadix, which is either nude or invested with a petaloid spathe; when (in *Lemna*) the flowers are subsolitary, the spadix is obsolete. Perianth 0 or 3–4–6-parted, scale-like. Stamens definite and opposite the lobes of the perianth or indefinite or solitary, hypogynous; anthers 1–2- or many-celled, opening outwards. Ovary single, free, 1- rarely 3-celled; ovules solitary or several, ascending or pendulous. Fruit mostly succulent, rarely dry, indehiscent, 1-many-seeded. Embryo in the centre of fleshy or floury albumen; plumule 2–3-leaved.—Mostly herbaceous plants, with acrid juices, and creeping or tuberous rootstocks. Leaves usually petioled, with expanded, ovate, sagittate or pedate-nerved leaves, and simple scapes bearing undivided spadices. The more reduced forms of the Order (as *Lemna* and *Pistia*) are small floaters.

|   |                 |
|---|-----------------|
| Tall herbs. Spathes white, convolute at base . . . . .      | 1. RICHARDIA.   |
| Terrestrial herbs. Spathes green, tubular at base . . . . . | 2. STYLOCHITON. |
| Floating herbs, with sessile, rosulate leaves . . . . .     | 3. PISTIA.      |
| Minute floating green scales . . . . .                      | 4. LEMNA.       |

#### 1. RICHARDIA, Kth.

Spathe convolute at base; limb expanded, marcescent. Spadix cylindrical, everywhere very densely covered with flowers, the lower part pistilliferous, with intermixed club-shaped staminodia, the rest altogether staminiferous. Anthers many, free, sessile, 2-celled; the cells attached to a broadly

cuneate connective, dilated above into a convex, glandular, 2-porous disk, opening through a pore in the summit of the disk. Carpels many, crowded, free, with 3 parietal placentas, incompletely 3-celled; ovules few; style short; stigma convex, glandular. Berry 1-celled, few-seeded.—*Kunth, Enum. iii. p. 57; Bot. Mag. t. 832.*

Marsh or water plants, with thick rhizomes. Leaves radical, on long petioles, cordate-hastate, nerved. Spathe large, creamy-white, sweet-scented.—*R. africana*, also called *Calla Æthiopica* and the "Lily of the Nile," is a common ditch plant throughout the colony; and another species, with spotted leaves, has recently been found at Natal.

## 2. STYLOCHITON, Schott.

Spathe short; tubular at the base. Spadix included, interruptedly clothed with stamens and pistils. Male: Perianth urceolate; filaments free, filiform; anthers 2-celled, bursting longitudinally; ovary rudimentary. Female: Ovary enclosed in a cup-shaped perianth; 2-4-celled; style exserted; stigma hemispherical; ovules 2 in each cell.—*Schott, Prod. Syst. Aroid. p. 344. Gueinzia, Sonder.*

Stemless herbs, with hastate, petioled, radical leaves.—1 species, from Natal.

## 3. PISTIA, Linn.

Spathe tubular at base, connate with the spadix; limb spreading, furnished with a process, involucreting the spadix above. Spadix interruptedly androgynous; female at base, male at the free apex. Anthers 3-8, adnate to the thickened apex of the spadix, subglobose, opening by a transverse furrow. Ovary 1, obliquely placed on the adnate base of the spathe, 1-celled; ovules numerous, from a subbasal placenta; style terminal, thick; stigma cup-shaped. Berry few- or many-seeded.—*Kunth, l. c. p. 7.*

Floating plants, with long, fibrous roots. Leaves several, sessile, expanding like a rose, entire, nerved. Spadices axillary, solitary, on a very short scape.—*P. stratiotes*, or an allied species, is found in still waters at Natal.

## 4. LEMNA, Linn.

Spathe androgynous, delicately membranous, sub-bivalve, in the marginal fissure of a lenticular or oblong frond; the males reduced to a stamen, the female to a pistil. Stamen hypogynous, exserted; filaments filiform; anthers 2-celled, didymous, the cells separate, globose, opening across. Ovary sessile, 1-celled; ovules 1-4; style short; stigma depressed. Utricle membranous, 1-4-seeded.—*Endl. Gen. n. 1668; E. Bot. t. 1095.*

Small floating plants, covering the surface of stagnant water, and known

as "Duck-weed;" with or without a root; their body frond-like, lenticular, rarely nerved, and with a sort of petiole. Flowers minute, bursting from a slit in the frond.—*L. minor*, at least, occurs in South Africa. The 5 species of which the Linnæan genus consists, have been recently distributed into 4 genera, based on very slight characters.

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### ORDER CXXXI. TYPHACEÆ.

Male and female flowers on distinct spadices of the same plant, closely crowded; the males reduced to a nude stamen, many barren; the females to a pistil. Fertile stamens solitary or 2-4 together and connate by their filaments, mixed with more numerous scale-like staminodia; filaments elongate; anthers 2-celled, erect; cells parallel. Pistils sessile or stalked, each surrounded by staminodia. Ovary 1-ovuled; ovule pendulous; style 1; stigma tongue-like, long, unilateral. Fruit 1-seeded, dry; embryo in fleshy albumen.—Marsh or aquatic. Stem simple or rarely branched, terete, leafy. Leaves scattered, narrow, linear, sheathing at the base. Spadices superposed at the the apices of the stem or branches, globose or cylindrical; the lower female, upper male.

#### 1. TYPHA, Linn.

Spadices 2, cylindrical, the male above the female. Fertile stamens 2-4 together, connate by their filaments. Ovaries on long stalks; style long, capillary.—*Kunth, l. c. p.* 90.

Erect, reed-like marsh plants, with creeping roots. Stem tall, terete, solid, nodeless, leafy. Leaves with long sheathing bases, linear. Spadices superposed on the end of the stem.—*T. latifolia* (the Reed-Mace), a native also of Europe, N. Asia, and America, is common in the colony by water-courses, etc.

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### ORDER CXXXII. PALMÆ.

Flowers bisexual or polygamous, on simple or branched spadices. Perianth 6-parted, persistent, in a double row; the 3 outer segments often smaller, the 3 inner sometimes deeply connate. Stamens in the base of the perianth, usually 6, seldom 3; in a few cases indefinite. Ovary 1-3-celled or deeply 3-lobed; ovules mostly solitary, very rarely in pairs, erect; styles as many as the cells, very short, mostly cohering. Fruit berried or drupaceous, 3-1-celled, 3-1-seeded. Embryo lodged in a special cavity of the cartilaginous, horny or oily albumen.

The Palms, the great ornaments of tropical scenery, have been justly



styled by Linnæus, the Princes of the Vegetable Kingdom. They usually rise with a simple, rarely branched trunk, sometimes to the height of over 100 feet, bearing on its summit a crown of large, pinnate or flabelliform, branch-like leaves, which are sometimes 10–20 feet long. Only two of this Order come within the limits of our Flora.

Trunk simple ; leaves pinnate . . . . . 1. PHŒNIX.

Trunk branched ; leaves palmate-flabelliform . . . . . 2. HYPHÆNE.

### 1. PHŒNIX, Linn.

Flowers diœcious, sessile on a branching spadix, girt with a simple spathe. Outer perianth urceolate, 3-toothed ; inner 3-parted. Stamens 6 or 3 ; filaments very short, scarcely any ; anthers linear. Female : Ovary of 3, separate carpels, of which only one matures ; stigmas hooked. Drupe 1-seeded ; seed with a longitudinal furrow on one side. Embryo dorsal.—*Endl. Gen. n.* 1763.

The well-known Date-Palms.—The only Cape species, *P. reclinata*, is a graceful Palm, with erect or reclining stems, and pinnate leaves. It grows\* near the coast in the Eastern district, and comes as far west as “George.”

### 2. HYPHÆNE, Gærtn.

Flowers diœcious, on a distichously-branched, imperfectly vaginate spadix. Outer and inner perianth both 3-parted. Stamens 6 ; filaments free ; anthers linear, basifixed. Female : Staminodia 6, rudimentary. Ovary 3- rarely 2-celled ; stigmas 3–2, sessile. Drupe abortively simple or 2–3-lobed, with a fibrous sarcocarp and ligneous putamen. Albumen horny, hollow. Embryo vertical.—*Endl. Gen. n.* 1748.

The famous Doum Palm, or “Gingerbread-nut Tree” of Nubia, is the type of the genus ; a second species has recently been observed to the north of Natal. Trunk in age repeatedly forked. Leaves palmate-flabelliform.

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## ORDER CXXXIII. LILIACEÆ.

Flowers bisexual, regular or subirregular. Perianth corolloid, deciduous or marcescent-persistent, 6-parted or lobed ; segments 2-seriate, separate or united in a tube or bell-shaped corolla, with a 6-fid limb, frequently secreting honey at base. Stamens 6, hypogynous or perigynous, rarely by abortion fewer ; occasionally a corona or row of barren stamens exterior to the fertile ones. Anthers introrse, erect or versatile, 2-celled. Ovary more or less perfectly 3-celled ; ovules either solitary, few or many ; style single ; stigma simple or rarely 3-parted. Fruit capsular, 3-celled, loculicidally 3-valved. Seeds with membranous, crustaceous or rarely fleshy skins ; albumen fleshy, copious ; embryo axile.—A vast Order, of very

various habit, including trees shrubs or bulbous or fibrous-rooted herbs. Leaves mostly linear, rarely petioled or dichotomo-multifid; bases sheathing. Flowers in racemes, spikes, umbels or heads or paniced; often large and showy, sometimes minute and greenish.

Tribe 1. HYACINTHÆ. Bulbous-rooted, scapigerous plants. Leaves all radical. Flowers in spikes, racemes or corymbis or corymboso-subcapitate; pedicels from the axil of a bract, not jointed below the flower. (Gen. 1-15.)

- (1) Perianth either tubular or the segments erect, converging or reflexed at the apices only.

Tube of perianth longer than the limb.

Limb erect, its lobes 1-nerved; stamens in the middle of the perianth-tube . . . . . 1. VELTHEIMIA.

Limb of 3 erect and 3 spreading, pluri-nerved segments; stamens in the throat, included . 15. UROPETALUM.

Tube of perianth short or very short.

Tube simple at base . . . . . 2. LACHENALIA.

Tube spurred at base . . . . . 3. CELANTHUS.

- (2) Perianth funnel- or salver-shaped, with a longer or shorter tube, or 2-labiate, very unequal-sided.

Perianth funnel-shaped, at length deciduous; filaments filiform.

Perianth-tube plaited within, towards the base 4. PERIBŒA.

Perianth-tube not plaited within . . . . . 5. POLYXENA.

Perianth salver-shaped, persistent; filaments dilated at base . . . . . 6. MASSONIA.

Perianth (of outer flowers) 2-labiate, the upper lip of 3 short, tooth-like segments, the lower very large, radiating, deeply 3-lobed . . . . . 7. DAUBENYA.

- (3) Perianth 6-parted, the segments widely spreading; tube short and wide or 0.

Scape imbricated throughout with cucullate bracts, under each of which is concealed a flower . . 8. WHITEHEADIA.

Scape racemose in the upper part, the raceme crowned with a tuft of leafy bracts . . . . . 9. EUCOMIS.

Scape racemose or corymbiferous, not crowned.

Sepals 1-nerved.

Sepals separate nearly to the base; ovary sessile . . . . . 10. SCILLA.

Sepals converging or connate below, strongly reflexed above.

Ovary stipitate; ovules 1-2 in each cell . 11. DRIMIA.

Ovary sessile; ovules 7-19 in each cell . 12. IDOTHEA.

Sepals 3- or several-nerved.

Perianth equally spreading; segments concave . . . . . 13. ORNITHOGALUM.

Perianth with 3 outer segments spreading, flattish; 3 inner erect, converging, with an inflexed gland at tip . . . . . 14. ALBUCA.

Tribe 2. ALLIÆ. Bulbous or fascicled-rooted, scapigerous plants.

Leaves all radical. Flowers either in umbels, subtended by a 2-leaved involucre; or solitary, terminal, subtended by 2 bracts. (Gen. 16-18.)

Flowers in umbels.

Perianth funnel-shaped; filaments filiform, exserted . . . . . 16. AGAPANTHUS.

Perianth with a fleshy or scaly corona; anthers sessile within the throat, included . . . . . 17. TULBAGHIA.

Flowers solitary, terminal (very minute); perianth tubular, 6-toothed; anthers subsessile within the lobes . . . . . 18. LITANTHUS.

Tribe 3. ANTHERICEÆ. Caulescent or scapigerous plants, with fasciated or rarely tuberous or bulbo-tuberous roots. Stem simple or branched or scape-like. Flowers racemose or paniced; the pedicels mostly articulated with the flower or below it. (Gen. 19-28.)

(1) Perianth cylindrical or bottle-shaped, more or less tubular; stamens hypogynous.

Perianth deeply 6-parted or cleft, 3 outer segments gibbous at base; leaves thick, fleshy or very hard and dry . . . . . 19. ALOE.

Perianth tubular, limb shortly 6-parted; leaves grass-like . . . . . 20. KNIPHOFIA.

(2) Perianth 6-parted; sepals horizontally spreading.

Sepals 1-nerved.

Filaments densely bearded in the upper half . . . . . 21. BULBINE.

Filaments glabrous.

Stemless, scapigerous plants, with fasciated roots . . . . . 22. BULBINELLA.

A climbing, branched, leafless plant, with tuberous-root . . . . . 25. BOWIEA.

Sepals 3-, 5- or several-nerved.

Stamens 6, all similar and subequal.

Sepals straight after flowering.

Filaments rough with reflexed, sharp points . . . . . 23. TRACHYANDRA.

Filaments quite smooth . . . . . 24. CHLOROPHYTUM.

Sepals spirally twisted after flowering . . . . . 26. CÆSIA.

Stamens 6; 5 small, abortive; 1 with a very large anther . . . . . 27. CYANELLA.

(3) Perianth campanulate, deeply 6-parted; stamens perigynous.

Root tuberous; leaves radical, petioled; seeds woolly . . . . . 28. ERIOSPERMUM.

Tribe 4. METHONICEÆ. Caulescent, with leafy, climbing or erect stems and tuberous roots. Peduncles 1-flowered, extra-axillary or opposite the leaves. Style deeply 3-fid. (Gen. 29-31.)

Perianth 6-parted to the base.

Sepals strongly reflexed; stamens and pistil wholly exserted . . . . . 29. METHONICA.

Sepals erecto-patent; stamens and style included . . . . . 30. LITTONIA.

Perianth tubular-bellshaped, ventricose, 6-toothed at mouth . . . . . 31. SANDERSONIA.

## TRIBE 1. HYACINTHEÆ. (Gen. 1-15.)

## 1. VELTHEIMIA, Gled.

Perianth tubular-subclavate, deciduous; limb 6-parted, regular; the lobes short, 1-nerved, suberect. Stamens attached to the middle of the perianth-tube, subequal, the longer scarcely exerted. Ovary sessile, oblong, 3-celled, tapering into a style; ovules 2-3 in each cell; style declinate-ascending, filiform, exerted; stigma shortly 3-lobed. Capsule dry-membranous, obovate, sharply 3-angle-winged, loculicidal. Seeds black, rugose.—*Kunth, Enum. iv. p. 281.*

Bulbous plants, with lanceolate-oblong, undulate, many-nerved leaves. Raceme densely many-flowered; the flowers shortly pedicelled, pendulous, purplish-red; pedicels 2-bracteate at base.—2 or 3 species.

## 2. LACHENALIA, Jacq.

Perianth campanulate or tubular, persistent; tube short or very short; limb deeply 6-parted in 2 rows, segments lying close, the outer gibbous dorsally under the apex, the inner longer, narrowed below, recurved at the apex. Stamens attached to the bases of the perianth-segments, often exerted. Ovary sessile, 3-celled; ovules many or few; style filiform, erect, equalling or exceeding the stamens; stigma obtuse. Capsule membranous, 3-cornered, 3-celled. Seeds globose, black.—*Kunth, l. c. p. 283.*

Bulbous, scapigerous plants. Leaves 1-2- rarely more-nerved, somewhat fleshy. Racemes lax or dense; flowers pedicellate or subsessile, cernuous, pendulous or suberect, yellow red greenish or whitish.—35 species, many worthy of cultivation.

## 3. CÆLANTHUS, Willd.

Perianth amply tubular-clavate, persistent; tube campanulate, saccate-spurred at base, the spur adnate to a short pedicel.—Other characters as in *Lachenalia*.—*Kunth, l. c. p. 282.*

*C. complicatus*, Willd., is the only species.—Flowers yellow.

## 4. PERIBŒA, Kth.

Perianth somewhat funnel-shaped, 6-cleft to the middle, regular, in fruit cut round the base and deciduous; the tube furnished on the inside above the base with 6 halfmoon-shaped plaits; segments spathulate-oblong, obtuse, 1-nerved, recurved at tip, the outer somewhat keeled. Stamens at the apex of the tube, the 3 inner longer, all shorter than the perianth. Ovary sessile, ovate, 3-celled; ovules 6 in each cell; style filiform, as long as stamens. Capsule membranous; cells 1-2-seeded. Seeds brown, obliquely elliptical.—*Kunth, l. c. p. 292.*

Small, bulbous, scapigerous plants. Leaves 2-4, linear, fleshy, girt at base, together with the scape, by a truncate, hyaline sheath. Scape short, few-flowered; flowers corymbose, erect, pedicellate, rosy-purple.—3 species, of which *P. corymbosa* (*Hyacinthus corymbosus*, Linn.) abounds at Green Point in March.

### 5. POLYXENA, Kth.

Perianth tubular-funnelshaped; tube very long, narrow, in fruit cut round at base and deciduous; limb regular of 6 revolute, spathulate-oblong, 1-nerved, nearly equal segments, the outer somewhat keeled. Stamens at the summit of the tube, shorter than the perianth-lobes; filaments filiform. Ovary sessile; ovules about 6 in each cell; style filiform, elongate, erect. Capsule membranous, roundish. Seeds 1-2 in each cell, obliquely-elliptical, brownish.—*Kunth, l. c. p. 294.*

A small, bulbous plant. Leaves 2, lanceolate-oblong. Flowers pale purple, in a loose corymb between the leaves.—1 species, from the Western districts.

### 6. MASSONIA, Thunb.

Perianth salver-shaped, persistent; tube cylindrical, straight; limb 6-parted, segments 1-nerved, equal, widely spreading or reflexed, more or less shorter than the tube. Stamens in the throat, longer than the limb, erect; filaments dilated at base. Ovary sessile; ovules numerous, rarely few; style filiform, very long, erect. Capsule membranous, 3-angled. Seeds subglobose, black, shining.—*Kunth, l. c. p. 295.*

Bulbous plants. Leaves 2, often appressed to the soil, somewhat fleshy, mostly broad, nerve-striate, sometimes hairy. Scape very short; flowers corymbose; outer bracts often very broad.—Several species.

### 7. DAUBENYA, Lindl.

Flowers di-poly-morphous; inner or upper flowers tubular, with a very short, subequally 6-parted, spreading limb; medial flowers more or less irregular; peripheric or lowest flowers very unequally 2-labiate, the upper lip of 3 small, acute segments; the lower very large, deeply 3-parted, the lobes oblong, obtuse. Stamens 6, at the base of the segments of the perianth, unequal; filaments subulate, dilated at base; anthers versatile. Ovary sessile, 3-angled, tapering into a style; ovules 6-10 in each cell.—*Kunth, l. c. p. 300; Lindl. Bot. Reg. t. 1813, and 1839. t. 53.*

Bulbous, 2-leaved plants, with the habit of *Massonia*, from which this genus chiefly differs by the very unequal-limbed, radiating outer flowers of the capitate, subsessile corymb; the innermost flowers are nearly as regular as those of *Massonia*. Flowers yellow or crimson.—2 or 3 species; very handsome.



## 8. WHITEHEADIA, Harv.

Perianth persistent, with a short, wide tube, partly adnate to the base of the ovary; limb 6-parted, stellately patent; segments oblong, flat, delicately membranous, 3-5-nerved and veiny. Stamens in the throat, their membrano-dilated filaments united in a coronal ring, quite free from the segments of perianth. Ovary sharply 3-angled, 3-celled; ovules many; style continuous with the ovary, subulate, recurved; stigma simple. Capsule obovate, crowned with the hooked style, membranous and veiny, broadly 3-winged. Seeds numerous, black.

*W. latifolia*, Harv., is a remarkable bulbous-rooted plant, discovered at Modderfontein, Namaqualand, by the Rev. Henry Whitehead, to whom I am indebted for many curious plants, and in honour of whom I name this genus. The leaves (probably 2?) are nearly orbicular, 8-10 inches long and wide, many-nerved, and probably lie flat on the ground, like those of a *Massonia*. The scape is 5-6 inches high, and clothed throughout with closely placed, imbricating, broadly-ovate and cucullate, taper-pointed bracts, within each of which is concealed a subsessile flower; the uppermost bracts being empty, as in *Eucomis*; the points of the bracts are reflexed. Though nearly related to *Eucomis* in floral structure, the habit is very peculiar, and the differences above indicated in the stamens and capsule, and the hooked style seem sufficiently distinctive.

## 9. EUCOMIS, L'Hér.

Perianth 6-parted, regular, persistent; tube short, furnished within towards the middle with a papillose or tumid ring; segments oblong, inflexed-cucullate at the apex, 1-nerved, equal, spreading. Stamens in the throat, subequal, adnate at base to the lobes of the perianth; filaments membrano-dilated and slightly connate at base. Ovary sessile, ovate or obovate; ovules many or few; style filiform, erect, equalling the stamens; stigma depressed-capitate, minute. Capsule coriaceous, 3-angled. Seeds few, black.—*Kunth, l. c. p. 301.*

Bulbous, scapigerous plants. Leaves broadly lanceolate or oblong, nerve-riate, thickish. Scape rather tall; raceme densely many-flowered, bearing a crown of leaves at its summit. Flowers greenish or whitish.—6 species.

## 10? SCILLA, Linn.

Perianth 6-parted, regular, urceolate or campanulate, deciduous, sometimes persistent; sepals subconnate at base, 1-nerved, equal, reflexed at tip. Stamens 6, shorter than the perianth; filaments flattened, wider or narrower, more or less adnate to the sepals at base. Ovary sessile, rarely very shortly stipitate, 3-angled; ovules 2-10 in each cell; style erect. Capsule membranous, ovate or roundish. Seed black or blackish.—*Kunth, l. c. p. 314; Lindl. Bot. Reg. t. 1355.*

Scapigerous, bulbous plants. Leaves thickish, mostly linear. Raceme few- or many-flowered. Flowers blue purple or rosy, rarely white.—*S. plumbea*, Lindl., the only Cape species, is a doubtful member of this genus, of which the genuine species are from the northern hemisphere.

### 11. DRIMIA, Jacq.

Perianth 6-parted nearly to the base, regular, persistent; sepals equal, converging and connate at base, 1-nerved, above widely spreading and reflexed, uncinately-inflexed at apex. Stamens at the base of the perianth-lobes and about equalling them, subequal or 3 shorter; filaments filiform. Ovary shortly stipitate, depressed-ovate; ovules 1–2 in each cell; style filiform, erect. Capsule membranous, sharply 3-angled. Seeds solitary, oblong, dorsally convex, flat in front, chestnut-brown.—*Kunth, l. c. p.* 338.

Scapigerous, bulbous plants. Leaves nerve-striate; raceme many-flowered, simple. Flowers on longish pedicels, dull coloured.—7 species.

### 12. IDOTHEA, Kth.

Perianth 6-parted, regular, deciduous; segments equal, connate below in a short, campanulate tube, 1-nerved, patent-reflexed. Stamens at the base of the segments, erect, rather shorter than the perianth; filaments a little dilated at base. Ovary sessile, ovate-conical; ovules 7–19 in each cell; style filiform, deciduous. Capsule dry, many-seeded. Seeds black, shining.—*Kunth, l. c. p.* 341.

Bulbous plants, separated by Kunth from *Drimia*. Leaves appearing mostly after or before the flowers, narrow. Scape elongate, many-flowered; flowers greenish or dull coloured.—10 species.

### 13. ORNITHOGALUM, Linn.

Perianth 6-parted, regular, persistent; sepals subconnate at base, 3–7-nerved, subequal, spreading, concave. Stamens at the base of the sepals; filaments flattened, subulate, the 3 inner sometimes wider and longer. Ovary sessile, 3-celled; ovules several; style erect; stigma thickened. Capsule membranous. Seeds mostly angular, black.—*Kunth, l. c. p.* 349.

Scapigerous, bulbous plants. Leaves nerve-striate, thickish, broad or narrow. Scape tall, racemose, corymbose or subcapitate at the summit, mostly many-flowered; flowers pedicelled, erect, white, green, rarely yellow, orange or scarlet. Bracts membranous.—Many species.

### 14. ALBUCA, Linn.

Perianth 6-parted, regular, persistent; sepals subconnate at base, either all or the inner ones only hooded, and with an in-

flexed glandular appendix at the apex, many-nerved, the outer spreading, flattish, the inner converging. Stamens 6, at the base of the sepals, the 3 outer shorter and often barren; filaments filiform, the 3 inner dilated at base. Ovary sessile, 3-celled; ovules numerous; style erect, thick, 3-furrowed. Capsule papery. Seeds many, black.—*Kunth, l. c. p. 373.*

Bulbous plants, with the habit of *Ornithogalum*. Racemes lax; flowers on long pedicels, cernuous, green yellowish or yellow or striped green and white; pedicels spreading, with a long, membranous bract at base.—Several species.

### 15. UROPETALUM, Gawl.

Perianth tubular-campanulate, long persistent, at length cut across the base and deciduous; limb 6-parted, regular, the segments several-nerved, the outer spreading, often long-pointed, inner shorter, broader, more highly connate among themselves, converging. Stamens 6, in the throat, included; filaments attached to the perianth-tube, free at the tips only. Ovary sessile, oblong, triangular; ovules numerous; style erect, bluntly 3-angled; stigma 3-fid. Capsule papery, ob-ovoid, depressed, sometimes narrowed at base, sharply 3-angled. Seeds numerous, flattened, margin winged, black.—*Kunth, l. c. p. 377.*

Bulbous plants. Leaves linear, thickish. Raceme simple, sparsely flowered; pedicels short, bracteate at base; flowers nodding, greenish or yellowish.—Several species, some undescribed, from Natal.

## TRIBE 2. ALLIÆ? (Gen. 16–18.)

### 16. AGAPANTHUS, L'Hér.

Perianth funnel-shaped, regular, at length cut across the base and deciduous, deeply 6-parted; tube rather short; segments subspathulate, 1-nerved, the 3 inner rather larger. Stamens in the throat, decurrent along the tube, declinate, as long as the segments; filaments filiform. Ovary sessile; ovules several; style filiform, curved. Capsule membranous. Seeds flattened, black.—*Kunth, l. c. p. 479.*

*A. umbellatus*, L'Hér., a well-known garden plant, is a tuberous-rooted, scapigerous plant. Leaves numerous, radical, broadly linear, thickish. Scape tall, bearing a very-many flowered umbel, involucred by 2 bracts. Flowers blue, rarely white.—Grows in various parts of the colony. There are 3 or 4 varieties, perhaps species.

### 17. TULBAGHIA, Linn.

Perianth funnel- or salver-shaped, tubular, the tube 3-angled, crowned either with a 3-lobed, fleshy corona or with 3 petaloid scales; limb 6-parted, regular; segments 1-nerved,

spreading, the outer sometimes shorter. Anthers 6, sessile in the throat of the corolla or within the fleshy crown, 3 opposite the inner segments higher on the tube than the others. Ovary 3-celled; ovules several; style short, thick, terete; stigma entire or 3-lobed. Capsule oblong or turbinate. Seeds black.—*Kunth, l. c. p.* 480; *Harv. Thes. t.* 180.

Scapigerous plants, with the odour of Garlic. Root of many thick, tufted fibres. Leaves narrow, linear. Scapes bearing many-flowered umbels, subtended by 2 spathaceous bracts. Flowers yellow, brown or rarely purple or violet.

### 18. LITANTHUS, Harv.

Perianth tubular, cylindrical, deciduous, the limb erect, equal, shortly 6-fid; lobes ovate, equal. Anthers 6, subsessile in the throat, included. Ovary sessile, 3-celled, several-ovuled; style filiform, as long as the perianth-tube; stigma 3-toothed. Capsule not seen.—*Harv. in Hook. Lond. Journ. Bot.* (1844), iii. *p.* 314.

A minute, bulbous plant, with 2–3 slender, filiform leaves; a bristle-like scape, 1–3 inches high, bearing at its summit a solitary, nodding, greenish flower,  $1\frac{1}{2}$  line long and  $\frac{1}{3}$  line diameter, subtended by 2 opposite, membranous, middle-fixed bracts.—Found by Zeyher, in 1843, near the Zwartkops river; also by Drège (n. 8514, C.); and recently by H. Bowker and Mrs. F. W. Barber, in Caffraria.

## TRIBE 3. ANTHERICEÆ. (Gen. 19–28.)

### 19. ALOE, Tourn.

Perianth subcylindrical, straight or curved, sometimes ventricose at base, nectariferous, deciduous, 6-parted or cleft, the segments more or less connate among themselves, the 3 outer gibbous at base, inner thinner; limb sometimes irregular or 2-labiate. Stamens 6, hypogynous, ascending, erect, rarely declined, equal or 3 shorter, included or rarely exerted. Ovary sessile; ovules numerous; style slender, sometimes very short; stigma simple or 3-lobed. Capsule membranous. Seeds black.—*Kunth, l. c. p.* 492.

A very large genus of succulents, chiefly South African. Root of many thick, tufted fibres. Stem often shrubby, sometimes arborescent, simple or branched, or very short. Leaves very closely set, amplexicaul, 3–5- or many-ranked, sometimes distichous, thick and fleshy, soft or very rigid, smooth, rough, tubercled or prickly, more rarely toothed or ciliate. Peduncles axillary or terminal, simple or branched, sometimes scape-like; flowers racemose, erect or pendulous, often gaily coloured.—Over 150 species, natives of dry places, mountain-sides, and borders of woods.

### 20. KNIPHOFIA, Moench.

Perianth tubular-subclavate, slightly curved, terete, 6-nerved, nectariferous at base; limb shortly 6-parted, regular;

segments ovate, suberect. Stamens in the base of the calyx (hypogynous), deflexed, mostly exserted. Ovary sessile, ovate-oblong, 3-angled; ovules several; style filiform, elongate, deflexed. Capsule bluntly 3-angled. Seeds brown-black.—*Kunth, l. c. p. 550*; *Bot. Mag. t. 4816*. *Tritoma, Gawl.* *Veltheimia, Willd.*

Stemless plants, with fascicled, fleshy roots. Leaves numerous, linear, taper-pointed, very long, concave, grass-like. Scape simple, ending in a many-flowered dense raceme; pedicels very short; flowers at length pendulous-reflexed, yellow orange or scarlet.—7 or 8 species.

## 21. BULBINE, Linn.

Perianth 6-parted, regular, marcescent, the segments distinct, equal, 1-nerved, widely spreading. Stamens at the very base of the sepals, often declined; filaments filiform, all (or only 3) bearded in the upper part. Ovary sessile, blunt-angled; ovules few; style erect or declined, slightly thickened upwards, truncate. Capsule subglobose. Seeds angular, blackish-brown.—*Kunth, l. c. p. 563*.

Caulescent or stemless plants, the stem simple and mostly very short. Roots fascicled, sometimes tuberous. Leaves crowded, fleshy, terete, semiterete, triquetrous or flat. Peduncles scape-like, racemose at the summit; flowers yellow.—15 or 16 Cape species.

## 22. BULBINELLA, Kth.

Perianth 6-parted, regular, marcescent, the segments connate at the very base, 1-nerved, widely spreading. Stamens at the base of the sepals and shorter; filaments subulate-filiform, glabrate. Ovary sessile, 3-celled; ovules in pairs; style filiform, elongate; stigma simple.—*Kunth, l. c. p. 569*.

Stemless plants, with fascicled roots. Scape leafy at base, simple, racemose at the summit; flowers on long pedicels, yellow or creamy. Leaves narrow, dry, flat, semiterete or 2-edged.—6 or 8 species.

## 23. TRACHYANDRA, Kth.

Perianth 6-parted, regular, at length deciduous; segments, connate at base, widely spreading, rarely revolute, equal, dorsally 3-nerved (the nerves subconfluent). Stamens at the base of the sepals and shorter; filaments flat, slender, retrorsely muricate; anthers erect, linear, fixed just above the base. Ovary sessile, 3-celled; ovules about 10, sometimes 4–2; style filiform, elongate. Capsule 3-angled, the valves either smooth, ridged or echinate. Seeds black.—*Kunth, l. c. p. 573*.

Stemless or subcaulescent plants, with fascicled roots. Leaves narrow, mostly radical, flat, thickish, glabrous or pubescent. Peduncle scape-like,



simple or branched. Flowers jointed with the long pedicels, soon withering.—Many species.

#### 24. CHLOROPHYTUM, Gawl.

Perianth 6-parted, regular, persistent, the sepals connate at the very base, widely spreading, 3 outer sub-5-nerved, 3 inner a little longer, narrower, 3-nerved. Stamens hypogynous, subequal; filaments filiform, glabrous. Ovary sessile; ovules several; style filiform, erect; stigma truncate. Capsule roundish, 3-angled, depressed, 3-lobed at the summit. Seeds few, lenticular.—*Kunth, l. c. p. 602.* Also *Hartwegia, Nees*, (which has very minutely papulose filaments, and an acute stigma, otherwise as in *Chlorophytum*), *Kunth, l. c. p. 607.*

Stemless plants, with fascicled, fleshy roots. Leaves radical, linear or lanceolate, membranous or rigid. Scape simple or branched. Flowers solitary or in pairs, white within, green on the outside.—6 Cape species.

#### 25. BOWIEA, Harv., not Haw.

Perianth 6-parted, stellately-patent, persistent; sepals broadly subulate, 1-nerved, somewhat keeled, uncinately-inflexed at apex. Stamens 6, at the base of the sepals, shorter than them; filaments filiform, glabrous, equal, spreading; anthers sagittate at base, erect. Ovary sessile, oval-oblong, 3-celled; ovules few (5-6) in each cell; style filiform, erect; stigma simple, subcapitate. Capsule coriaceous, ovate-oblong, 3-cornered, 3-celled, loculicidally 3-valved. Seeds about 4 in each cell, angular subpyriform, black; placentas at the apex prolonged into a slender, horn-like process.—*Bot. Mag. t. 5619.*

*B. volubilis*, Harv., is a bulbous plant, when young bearing a few filiform, terete, radical leaves; from the top of the bulb ascends a long, twining, voluble, succulent, branching panicle, bearing many times forked branchlets in the lower part, and long, pedicelled, laxly-racemose, greenish-white flowers in the upper. Branchlets filiform, each subtended by a minute subulate bract, as are also the pedicels. Pedicels either continuous or jointed at a variable distance below the flower!—The genus *Bowiea* of Haworth, having been long since merged in *Aloe*, I wish to give the name of Mr. James Bowie to the present very singular plant, which was discovered on the Katberg by Mr. Hutton, and has since been found by Cooper and by Mrs. Bowker on the Isomo, Caffraria.

#### 26? CÆSIA, R. Br.

Perianth 6-parted, regular, spirally-twisted after flowering, deciduous; sepals subconnate at base, 3-nerved, widely spreading, the inner scarcely wider. Stamens at the base of the sepals and shorter; filaments filiform, glabrous. Ovary sessile; ovules in pairs, erect; style filiform, elongate, erect. Capsule 3-lobed; cells 1-seeded, loculicidal. Seeds black.—*Kunth, l. c. p. 608.*

Stemless plants, with fascieled roots, with the habit of *Trachyandra*, but readily known by the spirally-twisted, persistent perianth and solitary seeds. The genus was founded on several New Holland species, which are said to have indehiscent seed-vessels. 4 Cape plants have been added, and in *C. Thunbergii*, R. and S., the capsule is as above described.

## 27. CYANELLA, Linn.

Perianth 6-parted, slightly irregular, deciduous; sepals connate at base and adnate to the base of the ovary, widely spreading, the lateral outer sepals 5-nerved, the lower 7-9-nerved, the 3 inner 3-nerved. Stamens 6, at the base of the perianth, declinate; filaments short, glabrous, monadelphous; anthers of the 5 upper stamens slender (abortive), opening by terminal pores, of the sixth (lowest), stamen large, perfect, splitting longitudinally. Ovary partly inferior; ovules several; style filiform, deflexed; stigma 3-fid. Capsule bluntly 3-angled. Seeds several.—*Kunth, l. c. p. 635.*

Plants with tubero-bulbous roots and radical, lanceolate or linear nerve-riate leaves, sheathing at base. Scape mostly branched. Flowers on long pedicels, cernuous, purple, rosy, white or yellow, sweet-scented.—*C. Capensis*, with bright purple flowers, is common, and there are 4 others.

### GENUS OF DOUBTFUL AFFINITY.

## 28. ERIOSPERMUM, Jacq.

Perianth 6-parted, urceolate-campanulate, regular, marcescent; sepals connate at base, 1-nerved, the inner wider and shorter. Stamens 6, in the throat of the perianth, much shorter than it; filaments broad, membranous, persistent. Ovary sessile, subglobose; ovules 6-8 in each cell; style thickish; stigma obtuse, simple. Capsule membranous, 3-celled, loculicidal. Seeds few, densely covered with soft, woolly hairs.—*Kunth, l. c. p. 649.*

Stemless plants, with large, unshapely, tuberous roots. Leaves mostly appearing before the flowers, petioled, with a broad lamina, coriaceous, nerved. Scapes emerging after the leaves, simple, nude, racemose at the summit; pedicels elongate, not jointed to the perianth.—8 or 9 species.

### TRIBE 4. METHONICEÆ. (Gen. 29-31.)

## 29. METHONICA, Herm.

Perianth 6-parted, marcescent-persistent; sepals distinct, lanceolate, narrowed at base, undulate, without nectary, reflexed. Stamens 6, at the base of the sepals, very widely spreading; filaments long, filiform, straight. Ovary sessile, obliquely oblong, 3-celled; ovules numerous; style filiform, strongly bent backwards; stigmas 3, long, narrow, channelled, patent-recurved. Capsule turbinate, coriaceous, 3-celled,

septicidal. Seeds numerous, globose, berry-like, scarlet.—*Kunth, l. c. p. 275.* *Gloriosa, Linn.*

Climbing, slender, branched plants, with tuberous roots. Leaves either scattered opposite or ternate, sessile, oblong-lanceolate, much acuminate, ending in a tendril. Peduncle extra-axillary or terminal, 1-flowered, elongate. Flowers very handsome, either scarlet orange or tinted with green and yellow.—*M. virescens* occurs in the Eastern districts, Caffraria and Natal, mostly near the coast.

### 30. *LITTONIA*, Hook.

Perianth 6-parted, campanulate; sepals oblong-acuminate, subcarinate, concave, erecto-patent, furnished at base inside with a nectariferous pore, margined on each side by a small scale. Stamens 6, hypogynous, free, shorter than the perianth. Ovary ovoid, 3-celled; ovules numerous; style about as long as the ovary; stigmas 3, filiform, reflexed. Capsule and seeds as in *Methonica*.—*Hook. Bot. Mag. t. 4723.*

*L. modesta*, Hook., the only species, was first found by Mr. Sanderson, at Natal, and has since been sent to me by Mr. H. Bowker from Kreilis country. It has the root, foliage and general habit of *Methonica*, but very different flowers. Peduncle short, opposite the leaves or extra-axillary, nodding; perianth orange.

### 31. *SANDERSONIA*, Hook.

Perianth tubular-campanulate, ventricose, 6-toothed at the mouth, at base nectariferous and furnished with 6 short, incurved, saccate spurs. Stamens 6, hypogynous, included; filaments free, subulate. Ovary sessile, ovoid-oblong, 3-celled; ovules numerous; style short; stigmas 3, filiform, spreading. Capsule (ripe not seen).—*Hook. Bot. Mag. t. 4716.*

*S. aurantiaca*, Hook., the only species, first found (along with *Littonia modesta*) by Mr. Sanderson, at Natal, has recently been sent to me by Mr. Bowker, from Butterworth, Kreilis Country, where also it accompanies the *Littonia*! Root tuberous. Stem erect, simple, angular. Leaves alternate, sessile, lanceolate, taper-pointed, and all but cirrhiferous. Peduncles opposite the leaves or extra-axillary, nodding, 1-flowered; flowers orange, about 1 inch long,  $\frac{3}{4}$  inch wide.

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## ORDER CXXXIV. MELANTHACEÆ.

Perianth petaloid, regular, 6-divided, the margins of the segments involute or valvate in bud. Stamens 6; anthers turning outwards (at least in the bud). Ovary free, 3-celled; ovules many or few; style deeply 3-fid or 3-parted. Capsule 3-celled, usually septicidal, rarely loculicidal. Seeds albuminous.—Chiefly distinguished from *Liliaceæ* by the æstivation, the extrorse anthers, deeply 3-fid style, and usually the dehiscence of the capsule. Many are poisonous.

- Perianth tubular-campanulate, with a 6-parted,  
spreading limb . . . . . 3. WURMBEA.
- Perianth of 6, clawed, deciduous sepals.  
Claws long; limb convolute-cucullate, bearing a  
stamen . . . . . 1. ANDROCYMBIUM.
- Claws moderate; limb flat or expanded.  
Sepals 2-saccate above the claw; styles 3, filiform . . . . . 2. MELANTHIUM.
- Sepals with a dark spot above claw; stigmas  
subsessile; ovary long . . . . . 4. BÆOMITRA.
- Perianth of 6, sessile, persistent sepals, reflexed  
after flowering . . . . . 5. ORNITHOGLOSSUM.

### 1. ANDROCYMBIUM, Willd.

Perianth 6-parted, deciduous; segments with long claws, convolute-cucullate above the claw, the hood nectariferous. Stamens inserted in the hood-like limb of the sepals, extrorse. Styles 3, short, distinct. Capsule 3-parted; lobes opening on the inner face, above.—*Kunth, l.c. p. 153.*

Bulbiferous, nearly stemless plants, with 2-4 broad, radical, many-nerved leaves. Flowers subsessile on a very short seape, crowded, hidden among large, leafy or coloured bracts.—Several species, some undescribed.

### 2. MELANTHIUM, Linn.

Perianth 6-parted, deciduous; segments clawed, 2-saccate above the claw, stellately spreading. Stamens 6, inserted at the base of the sepals; anthers extrorse. Styles 3, filiform, distinct. Capsule 3-parted.—*Kunth, l.c. p. 154.*

Bulbous plants, with simple, few-leaved stems, ending in a few- or many-flowered spike of white or rosy flowers. Leaves sheathing at base, radical or cauline, the upper ones short, reduced to sheaths.—6 or 8 species.

### 3. WURMBEA, Thunb.

Perianth tubular-subcampanulate, persistent, with a 6-cleft, spreading limb; tube with 6 gibbosities externally at base; throat plaited. Stamens in the throat of the perianth, exerted. Styles 3, filiform. Capsule 3-parted.—*Kunth, l.c. p. 159.*

Small, bulbous plants, with the habit of *Melanthium*, and deep purple flowers.—3 species.

### 4. BÆOMITRA, Salisb.

Perianth 6-parted, deciduous; segments narrowed into claws below, lanceolate, above the claw marked with a blackish spot, not glandular, spreading. Stamens inserted near the summit of the claw. Ovary prismatic, linear, 3-celled; styles (or subsessile stigmas) very short, revolute. Capsule elongate.—*Kunth, l.c. p. 162.*

*B. columellaris*, Sal. (*Kolbea Breyniana*, Schl.), is a small, bulbous plant,

with linear-lanceolate, ciliate, sheathing leaves, and few-flowered scapes. Flowers shortly pedicelled, yellow, reddish externally; pedicels 1-bracteate. —Common near Capetown.

### 5. ORNITHOGLOSSUM, Salisb.

Perianth 6-parted, persistent; segments subconnate at base, lanceolate-linear, scarcely clawed, with a gland above the base inside, widely spreading, reflexed after flowering. Stamens inserted at the base of the sepals, subhypogynous. Ovary elliptical, 3-celled; styles 3, filiform. Capsule elliptical, loculicidal.—*Kunth, l.c. p. 163.*

Bulbiferous. Stem simple or branched, leafy, corymboso-racemose at the summit. Leaves with clasping bases, lanceolate-linear. Flowers on long pedicels, green or whitish, nodding; peduncles 1-bracteate at base, widely spreading or deflexed in fruit.—2 or 3 species.

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## ORDER CXXXV. SMILACEÆ.

Perianth petaloid, 6-parted. Stamens 6, in the base of the sepals, rarely hypogynous. Ovary free, 3-celled; ovules 1 or several in each cell; style usually 3-fid; stigmas 3. Fruit a berry; seeds with a membranous coat, albuminous.—Perennial herbs, undershrubs shrubs or trees, with fibrous or succulent roots, or rhizomes. Stems often climbing. Leaves scattered, sessile or petioled, sometimes reduced to scales.

Perianth with a long, slender tube and spreading or reflexed limb; stemless plants, with radical, rigid, lanceolate or cylindric or terete leaves . . . . .

1. SANSEVIERA.

Perianth tubular-bellshaped, with a short, erect limb; climbing plants, with broad, netted-veined leaves and small flowers . . . . .

4. DICTYOPSIS.

Perianth 6-parted to the base or nearly so; climbing or suberect halfshrubs or herbs.

Flowers bisexual; peduncles 1-flowered.

False-leaves in fascicles, subtended by a scale . . . . .

2. ASPARAGUS.

False-leaves solitary, subtended by a scale . . . . .

3. MYRSIPHYLLUM.

Flowers dioecious, in umbels; leaves netted-veined . . . . .

5. SMILAX.

### 1. SANSEVIERA, Thunb.

Perianth with a long, cylindrical tube, and 6-parted, spreading or reflexed limb, deciduous; segments spatulate-linear, 1-nerved, obtuse, equal. Stamens in the throat, exerted, spreading. Ovules solitary; style filiform, erect, longer than the stamens; stigma capitate, entire. Berries 1 or 3 subconnate, globose, fleshy, 1-seeded.—*Kunth, Enum. v. p. 15.*

Stemless, with a thick, creeping rhizome. Leaves radical, numerous, lanceolate, thick and hard, often yielding very tough fibres for textile pur-



poses. Scape bracteate, simple, bearing a thyrsus of many flowers; flowers in fascicles, short-pedicelled, whitish or yellowish-green.—1 or 2 Cape species, Eastern.

## 2. ASPARAGUS, Linn.

Flowers bisexual or polygamo-dioecious. Perianth deeply 6-parted, persistent; sepals equal, 1-nerved, erecto-patent. Stamens at the base of the sepals, and shorter. Ovules 2–3–9 in each cell; style filiform, sometimes short, deciduous; stigma 3-fid, segments recurved. Berry globose, 1- or few-seeded.—*Asparagus* and *Asparagopsis*, *Kunth, l.c. pp. 57, 76.*

Undershrubs or branching herbs, often spinous. Leaves scale-like, subtending phyllocladia (or leaf-like ramuli or barren pedicels) of various form. Peduncles 1-flowered, mostly several together; flowers small, greenish or whitish.—Very many species, of which *A. Capensis* ("Wagten beetjie") is known to all.

## 3. MYRSIPHYLLUM, Willd.

Flowers bisexual. Perianth deeply 6-parted, persistent; segments equal, 1-nerved, erecto-patent. Stamens at the base of the segments, and shorter. Ovules 6 in each cell; style terminal; stigma 3-lobed or 3-fid, sometimes undivided. Berry globose, 3-celled. Seeds in pairs.—*Kunth, l.c. p. 105.*

Erect or voluble herbs. Leaves scale-like, subtending 1–3 fertile peduncles and 1 sterile (phyllocladium), leaf-like, more or less unequal-sided. Scarcely distinguishable from *Asparagus*, except that the "phyllocladia" are more leaf-like and expanded, and solitary (not fascicled).—8 species are described.

## 4. DICTYOPSIS, Harv.

Flowers bisexual. Perianth tubular-campanulate, with a short, spreading, 6-lobed limb, deciduous; lobes ovate, 3-nerved. Stamens inserted at the base of the perianth, but partially adnate to the tube, included. Ovary narrowed at base (substipitate), 3-celled; ovules in pairs?; style continuous, columnar; stigmas 3, capitate. Berry globose, succulent, 4–6-seeded; seeds very convex dorsally, flat in front.—*Hook. f. Bot. Mag. t. 5638.*

*D. Thunbergii*, Harv. (*Ruscus reticulatus*, Thunb.), a plant common in the woods of the Eastern districts, Caffraria, and Natal, is the type of this genus. It has a zigzag, rigid, climbing stem, leafy throughout. The leaves (not phyllocladia) are subsessile, broadly-ovate or ovate-lanceolate, rigid, shortly acuminate, with an evident midrib, and many (5–9 on each side) parallel secondary ribs, all slightly raised, and united, in a net-like manner, by horizontal, simple, raised veinlets. Peduncles simple and 1-flowered or subracemose and 3–5-flowered, rising either from the axils of the larger leaves or (toward the ends of the branches) from scale-like bracts. Berry  $\frac{1}{2}$  inch diameter.

5. **SMILAX**, Linn.

Flowers diœcious. Perianth 6-parted, spreading, deciduous; segments spreading, 1-nerved, outer mostly larger. Stamens subhypogynous, club-shaped, shorter than the sepals; anthers 1-locular, 2-locellate, basifixed, continuous with the filament, at length recurved. Ovary 3-(rarely 1-6-)celled; absent in the male flowers; ovules solitary; stigmas 3 (rarely 4-6), sessile, elongate, recurved, deciduous. Berry globose, 1-3-celled, 1-3-seeded. Seeds subglobose.—*Kunth, l.c. p. 160.*

Climbing, evergreen undershrubs; roots tuberos or fibrous. Stems mostly prickly, branches flexuous, angular. Leaves scattered, petioled, often cordate or hastate, reticulated, digitate-nerved; petioles mostly bearing 2 tendrils above the sheathing base. Flowers in axillary or racemose umbels, small, white or green.—1 or 2 species, in the Eastern districts and at Natal.

ORDER CXXXVI. **JUNCEÆ.**

Perianth 6-parted, more or less dry or glume-like, persistent. Stamens 6, on the base of the segments; or 3, opposite the 3 outer segments; anthers 2-celled. Ovary 1-3-celled; ovules 1, 3 or several in each cell; style 1; stigmas 3. Fruit capsular, 3-valved, loculicidal or rarely indehiscent. Seeds albuminous.—Herbs or rarely half-arborescent plants, with fistular, channelled or flat leaves and small, capitate or paniced, dry flowers. These are the true Rushes.

Ovary 3-celled, with many ovules.

Sepals 3-nerved; tufted or creeping plants, with simple culms, and terete or flat and grass-like leaves or leafless . . . . . 1. **JUNCUS.**

Sepals 1-nerved; plant with a trunk-like stem, crowned with many broad, serrate, channelled leaves . . . . . 2. **PRIONUM.**

Ovary 1-celled, with 3 ovules only; tufted plants with grass-like leaves . . . . . 3. **LUZULA.**

Ovary 3-celled, with solitary ovules; caulescent, with lanceolate tendril-bearing leaves . . . . . 4. **FLAGELLARIA.**

1. **JUNCUS**, Linn.

Perianth regular, 6-parted; segments connate at the very base, dorsally 3-nerved, widely spreading. Stamens 6, rarely 3. Ovary many-ovuled, 3-(or 1-)celled; style 1, often very short; stigmas 3, filiform, villous. Capsule many-seeded.—*Kunth, iii. p. 315.*

Perennial, tufted or ereeping plants, rarely annual, growing in damp soil or marshes. Culms simple, leafless or leafy. Leaves sheathing at base, terete, channelled or flat; sheaths entire; lamina sometimes abortive.

Flowers cymose or panicle, small, 2-bracteolate at base.—Several Cape species.

## 2. PRIONUM, E. Mey.

Perianth subregular, 6-parted; segments free, 1-nerved, concave; 2 lateral of the outer 3, keeled. Stamens 6. Ovary many-ovuled; style 0; stigmas 3, long, narrow, papillose within. Capsule 3-celled, many-seeded.—*Kunth, l.c. p. 314.*

*P. palmita*, E. Mey. (*Juncus serratus*, Thunb.), the well-known *Palmiet*, is the type of this genus. It has thick, trunk-like stems or caudices, 4–6 feet high, surmounted by a dense crown of large, broad, serrate, channelled leaves, from the centre of which rises a much-branched panicle of flowers. Common in watercourses and marshy ground.

## 3. LUZULA, DC.

Perianth regular, 6-parted; segments connate at the very base, mostly 1-nerved (rarely 3-nerved), widely spreading; outer subcarinate, inner smaller. Stamens 6. Ovary 1-celled; ovules 3, erect; style 1, sometimes very short; stigmas 3, filiform, villous. Capsule 1-celled, 3-seeded.—*Kunth, l.c. p. 296.*

Tufted perennials, sometimes creeping. Leaves grass-like, mostly flat and thin, often hairy, sheathing at base. Flowers umbelled, cymose or panicle, more or less branched. Flowers as in *Juncus*.—*L. campestris*, a nearly cosmopolitan species, occurs among Drège's plants (n. 3963).

(GENUS ALLIED TO JUNCÆÆ.)

## 4? FLAGELLARIA, Linn.

Perianth 6-parted, coloured, persistent; the inner segments larger. Stamens 6, hypogynous. Ovary 3-celled, sessile; ovules 1 in each cell, basilar, sessile, anatropous; stigmas 3, sessile, filiform, spreading. Drupe pea-like, crowned by the stigmas, 1-seeded, with a fleshy epicarp and bony endocarp. Embryo minute, in floury albumen.—*Kunth, l.c. p. 370.*

*F. Indica*, common in the tropics of the Eastern hemisphere, occurs at Natal, "where it is used to fix thatch," *Gerrard*. It is perennial, with a scrambling stem, the branches furnished at base with imbricating scales. Leaves alternate, lanceolate, nerved, ending in a spiral tendril, sheathing at base. Flowers in terminal panicles, small, often unisexual.

## ORDER CXXXVII. COMMELYNEÆ.

Perianth 6-parted, segments in 2 rows; outer calyx herbaceous, inner petaloid. Stamens 6 or fewer, hypogynous or on the base of the segments; anthers of some filaments

either wanting or differently formed from the others. Ovary 3-celled; ovules few in each cell; style 1; stigma 1, obtuse, capitate or peltate. Capsule 2-3-celled, 2-3-valved, loculicidal. Seeds often in pairs, albuminous.—Herbs with sheathing leaves, nodose stems, and quickly-withering flowers.

Flowers issuing from folded, spathe-like bracts.

Petals separate, the 2 lateral on long claws; filaments glabrous . . . . . 1. COMMELYNA.

Petals united in a tube by their claws; filaments bearded at top . . . . . 4. CYANOTIS.

Flowers panicled or corymbose, without involucre.

Ovary sessile, 3-celled; ovules 2 or more . . . 2. ANEILEMA.

Ovary stipitate, 2-celled; ovules solitary . . . 3. DITHYROCARPUS.

### 1. COMMELYNA, Linn.

Flowers irregular. Outer perianth-segments unequal, unchanged, persistent; the odd one outermost, boat-shaped, the 2 lateral larger, concave, more or less connate along their outer margins; inner segments marcescent; lateral on long claws, roundish; odd one smaller, of different form, sessile or shortly clawed, exterior to the lateral. Stamens 6, free; 3 fertile; 3 barren, with cruciate-quadrifid anthers; filaments beardless. Style elongate; stigma obtuse. Capsule obliquely 3-celled; lateral cells 2-, dorsal cell 1-seeded.—*Kunth, Enum. iv. p. 35.*

Branching, erect or procumbent plants. Leaves  $\frac{1}{2}$  sheathing, broadly-grasslike. Flowers pedicelled, blue or yellow, springing from a folded or cucullate, spathe-like bract.—A few Cape species.

### 2. ANEILEMA, R. Br.

Flowers subregular. Outer perianth-segments navicular, unchanged, persistent; inner larger, subequal, deciduous. Stamens 6, of which 3 2 or 4 are barren; sometimes 4, of which 2 are barren. Style elongate; stigmas simple. Capsule regularly 3-celled; cells 2- or few-seeded.—*Kunth, l.c. p. 64.*

Erect or diffuse, branching herbs. Leaves lanceolate or linear. Peduncles terminal, corymbose, forked or panicled; flowers solitary, pedicelled; peduncles 2-bracteolate at base. No spathaceous bracts, by which character these plants are readily known from *Commelyna*.—Several species at and near Natal.

### 3. DITHYROCARPUS, Kth.

Flowers more or less regular. Outer perianth-segments free, navicular; inner larger, persistent. Stamens 6, hypogynous, all fertile, 3 opposite the outer lobes shorter; filaments beardless. Ovary stipitate, 2-celled; ovules solitary; style

elongate; stigma subcapitellate. Capsule shortly stipitate, compressed, didymous, 2-celled, 2-valved. Seeds solitary.—*Kunth, l.c. p. 76.*

Herbs, often viscidly pubescent, creeping at base; branches simple, erect. Panicles terminal, simple or branched, bracteate. Flowers pedicelled, subracemose, unilateral, small.—1 or more Cape species, at Natal. *D. Capensis* is the only one mentioned by Kunth.

#### 4. CYANOTIS, Don.

Flowers subregular. Outer perianth-segments connate at base, navicular, subequal, persistent; inner longer, their claws connate in a tube, caducous. Stamens 6, subequal, hypogynous; filaments very long, bearded near the top; anthers similar. Ovary sessile, 3-celled; style 1, thickened upwards; stigma hollow. Capsule 3-celled, 3-valved. Seeds 2 in each cell.—*Kunth, l.c. p. 102.*

Annuals or perennials, mostly diffuse. Flowers blue, on longish, axillary or terminal peduncles, crowded, involucred by a folded, spathe-like, cordate bract.—*C. nodiflora* (*Tradescantia speciosa*, Linn.) is common through the colony, especially in the East.

### ORDER CXXXVIII. XYRIDEÆ.

Perianth 6-parted, in 2 rows; outer glumaceous; inner petaloid, its pieces with long claws. Stamens 6, 3 fertile inserted on the apex of the claw of the petaloid segments of perianth; anthers opening outwards. Ovary single, 1-celled; ovules numerous, on 3 parietal placentas; style 3-fid; stigmas multifid or undivided. Capsule 1-celled, 3-valved. Seeds numerous; embryo on the outside of floury albumen.—Rush-like plants, with radical leaves, and densely spiked, yellow flowers, borne on leafless stems.

#### 1. XYRIS, Linn.

Flowers densely spiked, each from the axil of a rigid, scaly bract. Perianth double, each of 3 pieces; outer segments unequal, the 2 lateral keeled, glumaceous, persistent, the anticus thinner and much larger, coloured, in the bud unfolding the inner, and falling on the opening of the flower; inner segments petaloid, on long claws, equal; claws free, but cohering at the apex with the staminodia; limbs widely spreading, each bearing a fertile stamen at its base. Staminodia alternating with the fertile stamens, hypogynous, free, filiform, 2-fid at the apex, and cohering with the laminæ of the inner segments, the lobes plumose. Style 3-fid; stigmas obtuse. Capsule membranous, many-seeded.—*Kunth, Enum. v. p. 2.*



*X. Capensis*, Thunb., our only species, is a small plant, with equitant, ensiform, radical leaves, and cone-shaped spikes of yellow flowers, borne on simple scapes.—Found throughout the colony in marshy situations.

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### ORDER CXXXIX. ERIOCAULINEÆ.

Flowers minute, unisexual, monœcious, rarely diœcious, collected into bracteate heads.—Male: Perianth in 2 series, outer of 2-3 glumes, inner tubular 2-3-fid. Stamens 3-6; filaments inflexed; anthers 2-celled.—Female: Perianth of 6 pieces in 2 series, the inner broader or reduced to bundles of hairs. Ovary superior, 2-3-celled; style short; stigmas 2-3; ovules solitary, pendulous in each cell. Capsule 2-3-celled, loculicidally 2-3-valved; cells 1-seeded. Seeds pendulous; testa coriaceous, shining, ribbed; the ribs hairy; albumen farinaceous; embryo usually lenticular, removed from the hilum.—Scapigerous herbs, often minute, usually growing in marshes. Leaves narrow, usually all radical. Scapes radical, bearing solitary, minute heads of flowers.

#### 1. ERIOCAULON, Linn.

Flowers usually monœcious; males in the centre of the head.—Male: Stamens 2-6, all fertile.—Female: Perianth-segments 6. Ovary 2-3-celled. Capsule 2-3-celled.—*Endl. Gen. Pl. p. 123.*

Usually tropical herbs, with slender, radical, rosulate leaves, transparent and beautifully septate under the microscope.—There are 2 Natal species.

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### ORDER CXL. RESTIACEÆ.

(By M. T. MASTERS, M.D., F.L.S.\*)

Flowers diœcious. Perianth glumaceous, persistent, of 6, rarely 4, distinct or rarely connate glumes in 2 rows; the outer 3 equal or more generally unequal, 2 lateral conduplicate, and 1 anterior flat or nearly so; the 3 inner glumes usually smaller and less rigid than the outer and nearly equal in form, sometimes exceeding the outer glumes.—Male: Stamens 3; filaments adnate at the base to the inner glumes; anthers introrse, exserted or included, 1-celled, dehiscing longitudinally, attached to the filament on the dorsal surface below the middle.—Female: Ovary 1-3-celled; ovules soli-

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\* The following monograph of the genera of *Restiaceæ* has been kindly supplied by Dr. Masters.—J. D. H.

tary, straight, pendulous from the upper and inner angle of each cell of the ovary; micropyle directed towards the base of the carpel; styles 1-3, distinct or connate, sometimes wanting; stigmas 1-3, plumose on the inner surface, exserted or included. Fruit capsular, 1-3-celled, loculicidally dehiscent, or 1-celled indehiscent and nucumentaceous. Seed solitary in each cell of the fruit, pendulous; testa coriaceous, horny or membranous; hilum naked or rarely thickened; albumen abundant, farinaceous. Embryo lenticular, at one end of the albumen opposite to the hilum.—Perennial herbs, with creeping or erect, scaly rhizomes, from which proceed simple or branched, leafy or leafless, sterile and fertile, solid or hollow, terete or angular culms; sheaths persistent, tubular, split on one side, on the smaller branches often provided with foliaceous mucros. Florets compressed angular or terete, sessile or stalked, fascicled or spicate, protected by bracts; spikelets 1- or more-flowered, solitary or in spikes panicles or fascicles, generally with sheath-like spathes intermixed.

An Order whose members are chiefly to be found in the South-Western corner of Africa and in the analogous quarter of the Australian continent; a few are found elsewhere in Australia, as well as in New Zealand, Tasmania, and one in Chili.—1 or 2 species are used for thatching.

Fruit capsular, dehiscent.

Sheaths of the culm persistent . . . . . 1. RESTIO.

Sheaths of the culm deciduous.

Capsule 3-celled . . . . . 2. DOVEA.

Capsule 2-celled . . . . . 3. ASKIDIOSPERMA.

Fruit indehiscent.

Male and female flowers in dense spikes.

Female flowers 2 or more in each spikelet.

Fruit angular . . . . . 4. LEPTOCARPUS.

Fruit compressed.

Outer glumes of female perianth winged . 5. THAMNOCHORTUS.

Outer glumes of female perianth not winged 6. CANNOMOIS.

Female flowers solitary.

Female flowers on a thick, fleshy stalk . . 7. HYPODISCUS.

Female flowers sessile or on a slender stalk . 8. HYPOLENA.

Male and female flowers in panicles or fascicles . 9. ELEGIA.

Male flowers panicled; female flowers spicate.

Fruit on a fleshy stalk . . . . . 10. WILLDENOVIA.

Fruit sessile . . . . . 11. CERATOCARYUM.

#### DOUBTFUL OR LITTLE-KNOWN GENERA.

12. ANTHOCHORTUS, N. ab Esenb.

13. CRASPEDOLEPIS, Steud.

#### 1. RESTIO, Linn.

Male and female spikelets of the same form, arranged in spikes or rarely in loose panicles; flowers numerous, rarely

solitary, compressed; perianth of 6 unequal glumes.—Males: Stamens 3; pistil rudimentary or wholly wanting.—Female: Stamens rudimentary or 0. Ovary 2–3-celled; style 1, dividing into 2–3 stigmatic branches. Capsule compressed, 1–2-locular (by abortion), dehiscent longitudinally through the dorsal suture.—*Kunth, Enum. iii. p. 382.* Rhodocoma, *Nees ab Esenbeck; Kunth, l.c. p. 480.* Ischyrolepis, *Steudel, Synops. Glumac. ii. p. 249.*

Rush-like plants, with persistent sheaths.—Species 75–80. An equal number in Australia.

## 2. DOVEA, Kth.

Flowers fascicled or in dense spikes, more or less triangular, longer than the bracts. Perianth of 6 unequal glumes in 2 rows; the inner longer than the outer.—Male: Stamens 3. Rudiment of pistil 3-lobed or 0.—Female: Staminodia 3, ligulate or 0. Ovary 3-lobed, 3-celled. Capsule 3-lobed, 3-celled, surmounted by the persistent base of the style, and splitting longitudinally at the projecting angles. Seeds with numerous raised wavy longitudinal ridges.—*Kunth, l.c. p. 457.*

Rush-like plants, with deciduous sheaths, having the inflorescence and general aspect of *Elegia*, with the fruit of *Restio*.—7 species, all natives of the Cape.

## 3. ASKIDIOSPERMA, Steudel.

Male flowers in a dense panicle or loose spike. Bracts linear, membranous; flowers triangular; glumes acute.—Female: Flowers in a compact spike; glumes lanceolate, lacerated at the margins, the inner 3 longer than the outer. Staminodes small, strap-shaped. Capsule oblong, compressed, 2-lobed, dehiscent.—A rush-like plant, with deciduous sheaths, which are of a greenish-blue colour.—*Steud. l.c. p. 257.*

A little-known genus, represented by a single species; when better known, it will probably be referred to some other genus. So far as at present known, it seems to connect *Elegia* or *Dovea* with *Restio*.—1 species.

## 4. LEPTOCARPUS, Brown.

Male and female spikelets nearly of the same form, arranged in spikes or panicles; many-flowered or rarely with a solitary flower. Perianth of 6 unequal glumes.—Male: Stamens 3.—Female: Ovary 3-angular, 1-celled, 1-ovuled; stigmas 3. Fruit 3-angular, horny, indehiscent, 1-seeded.—Sheaths persistent.—*Kunth, l.c. p. 480.* Calopsis, *Beauv.; Kunth, l.c. p. 421.*

The species have precisely the habit and appearance of *Restio*, but are distinguished by their triangular, 1-celled, indehiscent fruit.—6 African, besides a few Australian species.

5. **THAMNOCHORTUS**, Bergius, Brown.

Male and female spikelets nearly of the same form, spiked or paniced, both many-flowered. Perianth of 6 unequal glumes, the outer lateral pair, especially in the female flowers, often winged. Ovary 1-celled, 1-ovuled; style 1, undivided or with 2-3 stigmatic branches. Fruit compressed, 1-seeded, indehiscent.—Sheaths persistent.—*Kunth, l.c. p. 428.* *Staberoha, Kunth, l.c. p. 442.*

Plants having the inflorescence of *Restio* or *Leptocarpus*, but distinguished from the former by the indehiscent fruit, and from the latter by the winged glumes and usually by the single style.—14 species, all South African.

6. **CANNOMOIS**, Beauv.

Male and female spikelets dissimilar.—Males numerous, small, many-flowered, arranged in loose panicles. Perianth of 6 unequal glumes.—Females: Spikelets few, larger than the males, solitary or in spikes. Fertile flowers 2 or 3, lateral, rudimentary flowers numerous. Perianth of fertile flowers of 6 minute, hyaline, nearly equal glumes. Ovary ovoid, 1-celled, 1-ovuled; styles 2, distinct. Fruit oblong, compressed, leathery, 1-celled, 1-seeded, indehiscent.—The vascular bundle, which runs up the interior of the fruit to its apex where it enters the seed, becomes ultimately detached, and then gives exactly the appearance of a seed pendulous from the end of a raphe or funiculus. Sheaths of culm persistent.—*Kunth, l.c. p. 447.* *Mesanthus, Nees; Kunth, l.c. p. 484.* *Cucullifera, Nees; Kunth, l.c. p. 484.*

The inflorescence is like that of *Thamnochortus*, but the female flowers are very different.—3 species, all natives of the Cape.

7. **HYPODISCUS**, Nees ab Esenb.

Male and female spikelets similar, solitary or spicate.—Males many-flowered. Perianth compressed, unequally 6-glumed.—Female flower solitary. Perianth not compressed, membranous, of 6 nearly equal glumes on a thick fleshy, or on a short slender stalk. Ovary 1-celled, sessile or stalked; styles 2. Fruit bony, indehiscent, 1-celled, 1-seeded, stalked, smooth or tubercled, often surrounded at the base by a lobed, fleshy disk.—Sheaths of culm persistent.—*Kunth, l.c. p. 481.* *Bœckhia, Kunth, l.c. p. 448.* *Lepidanthus, Nees; Kunth, l.c. p. 404.* *Leucoplaus, Nees; Kunth, l.c. p. 481.*

Plants with the inflorescence and aspect of *Restio* or *Leptocarpus*, but widely different in the female flower.—11 species, all natives of the Cape.

8. **HYPOLÆNA**, R. Br.

Male and female spikelets dissimilar.—Males numerous, many-flowered, small, in spikes or panicles.—Females few, 1-flowered, spicate. Perianth of 6 unequal or nearly equal glumes in 2 rows. Ovary sessile, 1-celled; style 2-3-parted. Fruit ovoid or subglobose, bony, indehiscent, often surmounted by a thickened yellow disk or stylopod, 1-celled, 1-seeded.—Sheaths of culm persistent.—*Kunth, l.c. p. 451.*

The male plants resemble *Restio*, the females *Hypodiscus* in aspect; from the first they differ in the fruit, and from the latter in the sessile fruit, absence of disk, etc.—10 species, besides a few others, natives of Australia, Tasmania, etc.

9. **ELEGIA**, Thunb.

Male and female spikelets nearly of the same size and form, arranged in rather loose panicles, 1-flowered. Flowers compressed or triangular. Perianth of 6 glumes in 2 rows, in the male flowers the outer glumes shortest. Ovary 1-celled by abortion; styles 3, rarely 2. Fruit triangular, rarely pyriform or compressed, 1-celled, 1-seeded, indehiscent.—Sheaths of culm deciduous, rarely persistent (*E. deusta*).—*Kunth, l.c. p. 460.*

Readily distinguished from its allies by its deciduous sheaths, panicle inflorescence, and indehiscent, 1-celled fruit. The latter characters separate it from *Dovea*.—13 species, all South African.

10. **WILLDENOVIA**, Thunb.

Male and female spikelets considerably different in size and form; males many-flowered, small, numerous, in loose panicles.—Male flowers: Bracts and glumes linear, membranous.—Female spikelets large, solitary, rarely 2; bracts coriaceous, rigid. Flowers solitary, terminal, on a thickened, spongy, 6-lobed pedicel. Perianth of 6 nearly equal hyaline glumes in 2 rows. Ovary 1-celled; stigmas 2, rarely 3. Fruit stipitate, cylindrical, horny, indehiscent, 1-celled, 1-seeded.—Sheaths of culm persistent.—*Kunth, l.c. p. 452.* *Nematanthus, Nees; Kunth, l.c. p. 452.*

The female plants are closely allied to *Hypodiscus*, but the male inflorescence is different, and more like that of *Ceratocaryum*.—8 species, all South African.

11. **CERATOCARYUM**, Nees ab Esenb.

Male and female inflorescence dissimilar.—Male thyrsoid, bracts and glumes linear-lanceolate, membranous, inner glumes shortish.—Female spikelets 2-3, spicate. Flowers solitary, terminal. Perianth sessile, minute, hyaline, of 6 glumes in 2 rows, the inner row smallest. Ovary . . . Fruit sessile, bony,



1-celled, indehiscent, surmounted by the remnants of 2 woody styles.—Sheaths persistent.—*Kunth, l.c. p. 483.*

Tall, reed-like plants, with male inflorescence like that of *Willdenovia*; the female spikelets, however, are not solitary, and the flowers, as well as the fruit, are destitute of stalks.—2 species, natives of the Cape.

## 12. ? **ANTHOCHORTUS**, Nees ab Esenb.

“Flowers diœcious.—Males subracemose, protected by spreading bracts, clusters small, few-flowered, loose, axillary. Perianth funnel-shaped, 6-parted, chartaceo-membranous; segments of equal length, the outer ones narrower. Stamens 3, opposite to the inner segments; filaments short, contiguous at the base; anthers linear, acute, with a depressed median furrow at the upper portion, attached above the base, yellow. Rudiment of the pistil 0.—Female flower not known.—Stems filiform, tortuous, slender, articulate, fasciculately branched. Sheaths leafless, acute, spreading, membranous; special sheaths at the origin of each branch obtuse. Clusters short, cernuous, solitary in the axils of the upper sheaths. Rachis filiform, flexuose. Flowers 2–6, remote, shortly stalked, purple? Bract subperfoliate.”—*Nees ab Esenb. in Lindl. Introd. Nat. Syst. Bot. ed. 2. p. 451; Kunth, l.c. p. 485.*

A doubtful genus, established upon some fragments of male plants now in Dr. Sonder's herbarium. Probably these are the male plants of a species of *Hypolœna*. In the uncertainty as to the true nature of this genus, Nees's description is given at length.

## 13. ? **CRASPEDOLEPIS**, Steudel.

Spikelets terminal, 1–3. Flowers diœcious.—Males?—Female flowers spicate. Bracts imbricate, cartilaginous, aristulato-mucronate, mostly sterile, naked, fertile bracts 1–2, fimbriate at the margin, and provided with 5 stigmatiform appendages? Sepals 4?, hyaline, oblong, lanceolate. Style 1; stigmas 2, shorter than the bracts. Ovary oblong, rather rough on the surface, half the length of the petals. Fruit . . . —*Steudel, Synops. ii. p. 264.*

A doubtful and scarcely-known genus.

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## ORDER CXLI. **CYPERACEÆ.**

Flowers arranged in spikelets, consisting of several scale-like, dry or half-herbaceous bracts, called glumes, arranged alternately along an axis (rachis or racheole); each glume having in its axil a solitary, sessile flower. Perianth either 0 or formed of a definite number of bristles; or disk-like; more

rarely membranous. Stamens hypogynous, commonly 3; but varying from 1–12; anthers basifixed, 2-celled, often crested. Ovary 1-celled; style 2- or 3-fid; stigmas undivided or 2-fid; ovule 1, erect. Fruit an achene (sometimes enclosed in a bag-like envelope). Embryo in the base of floury albumen.—The true “sedges.” Tufted or creeping-rooted plants, with terete or more commonly 3-angled, solid culms; leaves with entire (not split) sheaths, and variously arranged inflorescence. Found in wet and dry places in all parts of the world.

(1) Flowers bisexual; rarely a few male or female intermixed.

Glumes 2-ranked (distichous).

Perianth 0.

Spikelets many-flowered.

Style filiform, not swollen at base.

Achene destitute of circling disk . . . 1. *CYPERUS*.

Achene in a lobed, top-shaped disk . . . 25. *HEMICHLENÄ*.

Style with a much-swollen base, jointed

to the ovary and deciduous . . . . 9. *ABILDGAARDIA*.

Spikelets 1-few-flowered.

Style filiform, not swollen at base.

Achene destitute of encircling disk.

Style 3-fid; spikelets in loosely  
tufted spikes or umbels . . . . 2. *MARISCUS*.

Style 2-fid; spikelets in densely  
compacted heads . . . . . 3. *KYLLINGIA*.

Achene in a cup-like triangular disk . . . 26. *ACROLEPIS*.

Style with a swollen, bulb-like base.

Stamens 3 (lower flowers male) . . . 17. *LEPISIA*.

Stamens 5–8 (or 3) (lower flowers male) . . . 18. *ELYNANTHUS*.

Perianth of bristles, scales, or tubular and bearing bristles.

Perianth of bristles.

Style tuberos at base.

Perianth of 8 long, hispid bristles;  
style long, 6-fid at apex . . . . 19. *BUEKIA*.

Perianth of 5, unequal, subhyaline  
bristles, 3 of them pubescent . . . 20. *IDELERIA*.

Perianth of 6, hispid or plumose bristles;  
style 3-fid . . . . . 21. *ASTEROCHÆTE*.

Style equal at base; bristles 3–6, rough  
or plumose . . . . . 24. *CHÆTOSPORA*.

Perianth of 3, narrow, 3-fid scales; the lobes  
bristle-shaped . . . . . 14. *TRIANOPTILES*.

Perianth tubular, crowned with 6 capillary  
bristles; spikelets 1-flowered . . . . 23. *CYATHOCOMA*.

Glumes imbricated on all sides.

Perianth of bristles or scales.

Style tuberos at base.

Culms leafless, bearing solitary, terminal  
spikelets . . . . . 4. *ELEOCHARIS*.

Culms leafy; spikelets capitate, corym-  
bose or paniced . . . . . 15. *RHYNCHOSPORA*.

- Style equal at base.  
 Spikelets many-flowered.  
 Perianth of 6 hispid, smooth or plumose  
 bristles . . . . . 5. *SCIRPUS*.  
 Perianth of 3 scales, and mostly 3 in-  
 terposed bristles; outer glumes hairy 6. *Fuirena*.  
 Spikelets 2-flowered; perianth of 6 short,  
 pilose bristles . . . . . 22. *SCLEROCHÆTIUM*.  
 Perianth 0.  
 Style equal at base.  
 Spikelets many-flowered.  
 Glumes simple, without any inner paleæ  
 or valves.  
 No disk surrounding the ovary or  
 achene . . . . . 7. *ISOLEPIS*.  
 A thickened 2-3-lobed disk under  
 the ovary . . . . . 10. *FICINIA*.  
 Glumes having within them either  
 paleæ or valves.  
 Paleæ 2, the larger hyaline, clasping  
 the flower . . . . . 12. *HEMICARPHA*.  
 Glumes internally bivalve; the valves  
 hyaline, clasping the flower . . . 13. *PLATYLEPIS*.  
 Spikelets few-flowered, minute, crowded  
 in a head and mixed with large, imbricated,  
 membranous bracts . . . . . 11. *MELANCRANIS*.  
 Style dilated at base.  
 Spikelets many-flowered; style-base often  
 ciliate, deciduous . . . . . 8. *FIMBRISTYLIS*.  
 Spikelets 2-1-flowered; achene completely  
 covered by the cup-like style-base . 16. *CLADIUM*.  
 (2) Flowers all unisexual; spikelets either monœ-  
 cious or androgynous.  
 Achenes without any special covering.  
 Inflorescence diffuse; achenes stony; culms  
 3-angled, leafy . . . . . 27. *SCLERIA*.  
 Spike solitary, many-flowered; the terminal  
 flowers female, the rest male, monandrous,  
 with very long linear anthers; culms flat;  
 leaves equitant . . . . . 28. *CHRYSTHRIS*.  
 Male spikes capitate, female axillary; fruit  
 inflated, with solid beak . . . . . 32. *AULACORHYNCHUS*.  
 Achenes enclosed in a sac-like envelope.  
 No bristle or awn within the sac of the achene.  
 Sacs free in the axil of the glume, 2-dentate 29. *CAREX*.  
 Sacs 3-angled, embracing the rachis of  
 spikelets . . . . . 31. *SCHÆNOXIPHIUM*.  
 A hooked awn projecting from the sac of  
 achene . . . . . 30. *UNCINIA*.

# TRIBE 1. CYPEREÆ. (Gen. 1-3.)

## 1. *CYPERUS*, Linn.

Spikelets many-flowered. Glumes distichous, all floriferous

and equal or a few of the lower empty and smaller. Perianth 0. Stamens 3, rarely 2-1. Style 3-fid, rarely 2-fid, deciduous. Achene triangular or rarely compressed, often mucronate by the persistent base of style.—*Kunth, Enum. ii. p. 2.*

A large genus. Culms rarely leafless. Leaves grassy, mostly flat. Spikelets tufted, capitate or in simple or decompound umbels.—Many Cape species, in damp or wet soil.

## 2. MARISCUS, Vahl.

Spikelets 1-2, rarely 3-5-flowered. Glumes distichous; the lower empty. Perianth 0. Stamens 3. Ovary triangular; style 3-fid, deciduous. Achene triangular, sunk in a hollow of the rachis, often mucronulate.—*Kunth, l.c. p. 115.*

Habit of *Cyperus*, from which this differs by the few-flowered spikelets. Spikelets spicate; the spikes aggregated in heads, tufts or umbels.—3 or 4 Cape species.

## 3. KYLLINGIA, Rottb.

Spikelets compressed, 1-2-flowered, the upper flowers male, rarely 3-flowered. Glumes distichous, the fertile keeled, the sterile small. Perianth 0. Stamens 1-3. Ovary compressed; style 2-fid, deciduous. Achene compressed, mucronate.—*Kunth, l.c. p. 127.*

Culms leafy at base, rarely leafless. Leaves grassy. Heads of spikelets solitary, rarely 2-3, compact, generally involucred by 2-3 long, leafy bracts.—Several Cape species.

## TRIBE 2. SCIRPEÆ. (Gen. 4-11.)

### 4. ELEOCHARIS, R. Br.

Spikelets many-, rarely few-flowered. Glumes imbricated on all sides, similar, a few of the lower empty. Perianth of 6, rarely more or fewer bristles, mostly reversedly hairy; very rarely 0. Stamens 3, rarely fewer. Style 3-fid, rarely 2-fid, dilated at base. Achene triangular or lenticular, crowned with the persistent style-base.—*Kunth, l.c. p. 139.*

Marsh plants, with leafless culms, frequently creeping roots, and terminal, solitary spikes.—About 2 Cape species.

### 5. SCIRPUS, Linn.

Spikelets many-, rarely few-flowered. Glumes imbricated on all sides. Perianth of 6, rarely fewer, hispid, smooth or plumose bristles. Stamens 3, rarely fewer. Style 3-fid, rarely 2-fid, not swollen at base. Achene triangular or compressed, obtuse or tipped with the base of style.—*Kunth, l.c. p. 157.*

Culms leafy or leafless, terete or triangular. Leaves grass-like. Spikes rarely solitary, mostly tufted, capitate or compound-umbellate.—Several Cape species. Those with solitary heads are only known from *Eleocharis* by the unswollen style-base.

### 6. FUIRENA, Rottb.

Spikelets many-flowered. Glumes imbricated on all sides, a few of the outer empty. Perianth of 3 scales alternating with the angles of the ovary, mostly with as many bristles interposed, in fruit enlarged, rarely wanting. Stamens 3. Style 3-fid. Achene triangular, beaked or mucronate by the style-base, covered by the enlarged scales and bristles.—*Kunth, l.c. p. 180.*

Culms angular, leafy. Leaves grassy. Spikes either solitary or in threes or several in a head, axillary or terminal. Glumes convex, mucronate or awned under the blunt apex, the outer hairy.—3 or 4 Cape species.

### 7. ISOLEPIS, R. Br.

Spikelets many-, rarely few-flowered. Glumes imbricated on all sides, similar. Perianth 0. Stamens 3, rarely fewer. Style 3-fid, rarely 2-fid, equal at base, deciduous. Achene triangular or compressed, pointless or tipped by the base of style.—*Kunth, l.c. p. 187.*

Culms leafy or leafless. Spikelets lateral or terminal, solitary, in pairs, threes or cluster-capitate; glomerules solitary or in simple or compound umbels.—Several Cape species.

### 8. FIMBRISTYLIS, Vahl.

Spikelets many-flowered. Glumes imbricated on all sides, scarcely any empty. Perianth 0. Stamens 3, rarely fewer. Style 2-fid, rarely 3-fid, with a much thickened, often ciliate base, articulated to the ovary and deciduous. Achene lenticular, rarely triangular, nude and pointless at the apex, girt at base with a minute, membranous ring.—*Kunth, l.c. p. 220.*

Stems leafy, angular. Spikelets solitary, geminate, capitate-glomerate or umbelled; umbel often compound. Glumes mostly keeled.—Several Cape species.

### 9. ABILDGAARDIA, Vahl.

Spikelets many-flowered. Glumes distichous, when in fruit by a twist of the rachis 3-farious, keeled, deciduous, the base on each side persisting. Perianth 0. Stamens 1-3. Style 3-fid, with a pyramidal-thickened base, articulated to the ovary and deciduous. Achene subpyriform, triangular, umbonate.—*Kunth, l.c. p. 247.*

*A. monostachya*, our only species, is a small, tufted plant, very pale in



colour, with simple culms, leafy at base only, and solitary, terminal, straw-coloured spikelets.—Eastern districts.

### 10. **FICINIA**, Schrad.

Spikelets many-flowered. Glumes imbricated on all sides. Perianth 0. Stamens 3. Ovary mostly sitting on a fleshy disk; style 3-fid, rarely 2-fid, equal at base, deciduous. Achene pointed or pointless, flattish on the inner, convex and bluntly angled on the outer side, very rarely convex on both sides, mostly on a fleshy entire or 2-3-lobed disk.—*Kunth, l.c. p. 251.*

Culms leafy below or leafless. Spikelets very variously disposed; solitary or few or many in a cluster or capitate-glomerulate, rarely racemose; glomerules compound or umbelled. Glumes keeled, many-nerved.—Many species, very diverse in aspect.

### 11. **MELANCRANIS**, Vahl.

Spikelets few-flowered, minute, crowded in a head and mixed with large, imbricated, membranous, acuminate, dorsally convex, glume-like bracts, which conceal the spikelets. Glumes imbricated on all sides. Perianth 0. Stamens 3. Ovary on a fleshy disk; style deeply 3-fid, equal at base, deciduous. Achene 3-angled, obtuse, on a disk.—*Kunth, l.c. p. 264.*

*M. scariosa*, the only certain (of 3 or 4) species, looks like a 1-headed *Ficinia*, but on examination the inflorescence will be found to be very different. The heads vary in size and the bracts in colour.—Found throughout the colony.

## TRIBE 3. **HYPOLYTREÆ**. (Gen. 12-13.)

### 12. **HEMICARPHA**, Nees.

Spikelets many-flowered. Glumes imbricated on all sides, obovate-cuneate, deciduous; inner (palea) smaller; lateral very thin, hyaline, clasping the flower. Perianth 0. Stamens 1, sublateral. Style 2-fid. Achene elliptic-oblong, subterete, umboned, punctulate, enrolled in a hyaline scale.—*Kunth, l.c. p. 268.*

A small plant, resembling *Isolepis setacea*. Culms tufted, leafy at base leaves setaceous. Spikelets solitary, ovate, obtuse, sessile. Bract 1-leaved, continuous with the culm.

### 13. **PLATYLEPIS**, Kth.

Spikelets many-flowered. Glumes (composed of 2 united by their inner margin) imbricated on all sides, slightly convex, roundish, narrow-pointed at the apex, spongioso-coriaceous, internally bivalve, externally subtended by a much smaller

cuneate or lanceolate, membranous scale; valves hyaline, covering the flower. Perianth 0. Stamens 2-3. Ovary flattened; style 2-fid, equal at base. Achene obovate-clavate, biconvex, shortly stipitate, punctulate, enclosed in the valves of the larger palea.—*Kunth, l.c. p. 269.*

*P. Capensis*, our only species, was discovered by Drége on the Katberg and in Caffraria. Its culms are slender, tufted, leafy at base, and bear a head of 1-3 spikelets, subtended by 2 long involucre bracts. The whole plant is very pale.

#### TRIBE 4. RHYNCHOSPOREÆ. (Gen. 14-26.)

##### 14. TRIANOPTILES, Fenzl.

Spikelets 2-flowered, both bisexual. Glumes distichous, keeled, boat-shaped, 3 lower empty. Perianth of 3, narrow-linear, 3-fid scales, villous-ciliate below; the lobules bristle-shaped, the medial longer. Stamens 3. Style very long, 2-fid at the apex, swollen and hairy at the base. Achene obovate, flat towards the axis, convex and obtusely angled in front, minutely dotted, beaked, girt by the persistent enlarged perianth scales; the beak continuous, hairy at tip.—*Endl. Gen. 113; Kunth, l.c. p. 287 (Ecklonia).*

*T. Capensis (Ecklonia Capensis, Steud.)*, found on Table Mountain, has simple, leafy culms, and axillary or terminal, subgeminat, many-spikeleted peduncles. Spikelets tufted, lanceolate, subcompressed, brownish-straw-coloured.

##### 15. RHYNCHOSPORA, Vahl.

Spikelets 1-9-flowered, either all the flowers bisexual or the lower bisexual or female, the rest male. Glumes imbricate on all sides (or imperfectly distichous), 1-nerved, often mucronate-awned, the lower smaller, empty. Perianth of 6 or more or fewer bristles, sometimes minute or wanting. Stamens 3 (2-1). Style more or less deeply 2-fid, thickened at base. Achenes biconvex, beaked with the persistent, conical or subulate, hardened style-base.—*Kunth, l.c. p. 287.*

Culms leafy. Spikelets capitate, corymbose or paniced, brown or straw-colour.—Few Cape species.

##### 16. CLADIUM, R. Br.

Spikelets 2-1-flowered, the flowers bisexual, the lower rarely male. Glumes imbricate on all sides, lower empty. Perianth 0. Style 3-fid (rarely 2-fid), conical-bulbous at base, continuous. Achene bony, completely covered over by the much enlarged, cap-like, adherent base of style.—*Kunth, l.c. p. 303.*

*C. Mariscus*, an almost cosmopolitan species, is found in Uitenhage. Culms tall, leafy, ending in a long thyrus of densely, much-branched panicles of small, clustered, chestnut-brown spikelets.

17. **LEPISIA**, Presl.

Spikelets 2-flowered, the upper flower bisexual, lower male. Glumes distichous, boatshaped, keeled, the lower gradually smaller, mucronate-awned, empty. Perianth 0. Stamens 3. Style 3-fid, pyramid-thickened at base, continuous with the ovary. Achene 3-angled, beaked by the style-base.—*Kunth, l. c. p. 307.*

*L. ustulata*, Pr., has leafy, subterete stems; filiform channelled, rigid leaves, and fascicled spikelets, the fascicles in a raceme, subtended by a leaf.

18. **ELYNANTHUS**, Lestib.

Spikelets 1-4-flowered, the terminal bisexual, 3-6-androus, the rest male, 5-8-androus. Glumes distichous, keeled-boat-shaped, lower empty. Perianth 0. Style 3-fid, tuberosus at base. Achene triangular, crowned with the style-base.—*Kunth, l. c. p. 308.*

Rigid, with leafy culms, and channelled, very narrow leaves. Spikelets fascicled near the top of the culm; fascicles racemose.—Few species.

19. **BUEKIA**, Nees.

Spikelets 2-flowered, both bisexual. Glumes about 5, subdistichous, keeled, 3 lower empty. Perianth of 8 long, slender, hispidulous bristles. Stamens 3. Style very long, 6-fid at the apex, tuberosus at base. Fruit (a nut-like caryopsis) ovoid globose, papery, smooth, crowned with the style-base, girt with a callous ring at base.—*Kunth, l. c. p. 310.*

Culms tall, terete, rigid, 1-leaved at base. Leaves terete, rigid, pungent. Panicle terminal, contracted, subsimple, from the axil of a pungent, short leaf.—*B. pungens* the only species.

20. **IDELERIA**, Kth.

Spikelets 2-flowered, both bisexual. Glumes few, distichous, boatlike, keeled, the lower empty. Perianth of 5, capillary, whitish-hyaline bristles, pubescent above, 2 of them much shorter, thinner and glabrous. Stamens 6. Style 3-fid, conical-thickened and hispid at base. Achene?—*Kunth, l. c. p. 310.*

Culms 3-angled, leafy, scabrid. Leaves narrow, rigid, channelled, rough-margined. Peduncles axillary and terminal, tufted, many-spiked; spikelets tufted, bracteate. All parts very pale.—*J. Capensis*, Kth., found near Ezelbank by Drége.

21. **ASTEROCHÆTE**, Nees.

Spikelets 2-flowered, both bisexual. Glumes few, distichous, keeled, the lower empty. Perianth of 6 hispid or

plumose-pubescent, persistent bristles. Stamens 3. Style 3-fid, pyramid-thickened at base. Achene 3-angled, crowned or beaked by the style-base and girt by the bristles.—*Kunth, l. c. p. 311.*

Coarse-growing, pale sedges, with 3-angled, leafy culms. Leaves rigid, flat but keeled. Panicles or thyrsi axillary or terminal; spikelets solitary or capitate.—3 Cape species.

## 22. *SCLEROCHÆTIUM*, Nees.

Spikelets 2-flowered, upper bisexual, lower male. Glumes imbricate on all sides, keeled, lower empty, subulate-awned. Perianth of 6 short, cartilaginous, pilose bristles. Stamens 3. Style 3-fid, equal at base. Achene stalked, 3-angled, girt by the short bristles.—*Kunth, l. c. p. 320.*

Culms tall, sub-3-gonous, leafy. Leaves narrow linear, keeled, rigid. Panicle terminal, branched, leafy, nodding; spikelets tufted, bractcate; bracts long, awned.—2 species.

## 23. *CYATHOCOMA*, Nees.

Spikelets 1-flowered. Glumes distichous, the lower smaller, empty. Stamens 5-6; anthers mucronate. Perianth membranous, tubular, bearing 6 capillary bristles, as long as the pistil. Style deeply 3-fid, its base thickened, continuous with the 3-angular ovary.—*Kunth, l. c. p. 322.*

Culm jointed, fragile at the joints, rigid. Leaves very roughly serrulate. Spikelets in axillary, 2-fid, flexuous spikes.—2 species.

## 24. *CHÆTOSPORA*, R. Br.

Spikelets 1-5-flowered, all bisexual. Glumes distichous, the lower smaller, empty. Perianth of 3-6 scabrous or plumose bristles. Stamens 3. Style 3-fid, equal at base, deciduous. Achene 3-angled, more or less tipped with the persistent style-base, girt with the bristles.—*Kunth, l. c. p. 323.*

Culms leafy at base. Leaves setaceous, channelled or flat. Spikelets tufted or subcapitate, rarely axillary and terminal.—6 Cape species.

## 25. *HEMICHLÆNA*, Schrad.

Spikelets several-(5-9)-flowered, all bisexual. Glumes distichous, boatshaped, keeled, 1-2 lower empty. Perianth 0. Stamens 3. Style 3-fid, equal at base, deciduous. Achene flat inside, convex-angled without, scarcely umbonate, sitting in an irregularly lobed, turbinate disk.—*Kunth, l. c. p. 330.*

Culms simple or branched, leafy. Spikes terminal, solitary or several in a tuft. Glumes brown.—3 Cape species.

26. **ACROLEPIS**, Schrad.

Spikelets 2-3-flowered. Glumes distichous, the lower empty. Perianth 0. Stamens 3. Style deeply 3-fid, equal at base, deciduous. Achene crustaceous, 3-angled, umbonate, sitting in a cup-like, triangular disk, with a crenate margin.—*Kunth, l. c. p. 330.*

Culms much branched, leafy. Spikelets terminal and lateral, peduncled. —“The genus differs from *Hemichlæna* by the smaller, few-flowered spikelet, furnished at base with an accessory bract, the joints of the rachis closer, and a thin sterile glume terminating the spikelet.”—*Nees.*

**SCHÆNUS**, R. Br.—Thunberg has several species under this genus, which require re-examination as to their general character. I therefore omit the genus.—*Kunth, l. c. p. 334.*

TRIBE 5. **SCLERINÆ**. (Gen. 27-28.)27. **SCLERIA**, Linn.

Monœcious.—Male: Spikelets mixed with a few female and androgynous spikelets, many flowers. Glumes imbricate on all sides, the outer subdistichous, empty. Stamens 3-2-1.—Female: Spikelets 1-flowered. Glumes few. Styles 3-fid. Androgynous spikelets several-flowered, the lower flower female, the rest male. Achene stony or crustaceous, on a more or less 3-lobed (often ciliate, fimbriate or multifid) disk.—*Kunth, l. c. p. 339.*

Culms 3-angled, leafy. Leaves 3-5-nerved, rigid, grass-like; vagina often prolonged, at both sides, above the starting-point of leaf-blade. Spikelets paniced, racemose or spiked.—Several Cape species.

28. **CHRYSITRIS**, Linn.

Spikelet many-flowered, androgynous, outer flowers many, male, monandrous, each from a single glume, central flower female, nude. Glumes imbricate on all sides, the inner linear, acute, 1-nerved, hyaline-membranous, deciduous, outer larger, coriaceous, empty; receptacle conical. Perianth 0. Anthers linear, with a very long, hispidulous crest. Style deeply 3-fid; ovary pear-shaped. Fruit?—*Kunth, l. c. p. 365.*

Culms strongly compressed, broad, simple, leafy at base. Leaves equitant, broadly linear, straight, resembling the culm, rigid. Spikelet solitary, ovate-oblong, from the axil of a short, terminal, sheathing leaf.—2 species.

TRIBE 6. **CARICINÆ**. (Gen. 29-32.)29. **CAREX**, Linn.

Spikelets androgynous or monœcious, very rarely diœcious. Glumes imbricate on all sides, 1-flowered. Flowers uni-



sexual.—Male: Perianth 0. Stamens 3, in the axil of the glume.—Female: Ovary enclosed in a saccate palea; style 2-3-fid. Achene lenticular or 3-angled, enclosed in the enlarged 2-dentate, saccate utricule.—*Kunth, l. c. p. 368.*

A vast genus, diffused over the world. Culms triangular, leafy. Spikelets variously disposed, mostly many-flowered.—Several Cape species Eastern.

### 30. UNCINIA, Pers.

Spikelets androgynous, male in the upper, female in the lower half. Glumes imbricate on all sides. Perianth 0.—Male: Stamens 3.—Female: Ovary enclosed in a saccate utricule, and having at its base (within the sac) a hooked awn; style 3-fid, rarely 2-fid. Achene enclosed in the persistent and enlarged sac; awn persistent, exserted.—*Kunth, l. c. p. 524.*

Culms 3-angled; leaves grassy; spikelets solitary, terminal, erect.—1 Cape species.

### 31. SCHÆNOXIPHIUM, Nees.

Spikelets disposed in compound spikes, the terminal of each branchlet male, the lateral androgynous, subdistichous, sessile, bracteate at base.—Male spikelets many-flowered; glumes imbricate all round. Stamens 3. Androgynous; upper flower male, the basal flower female. Glume (or palea) of the female flower opposite the bract, contiguous to the common rachis, 2-keeled, embracing the pistil and the base of the racheole, its margins more or less connate so as to form a 3-angled sac, persistent in fruit. Perianth 0. Style 3-fid. Achene 3-angled, beaked by the style-base, covered by the persistent, saccate palea.—*Kunth, l. c. p. 528.*

6 species, resembling androgynous Carices.

### 32. AULACORHYNCHUS, Nees.

Spikelets monœcious, the female axillary.—Male: Glumes distichous, 4-5, papery-membranous, all except the lowest fertile. Stamens 3; anthers long, erect, cuspidate.—Female: Glumes as in the male, imbricate all round, 6-7, the lower all sterile, the uppermost alone fertile. Perianth 0. Style elongate, attenuate below, deeply 3-fid, with long, twisted, hispidulous branches; base thick, 3-furrowed, persistent. Fruit utricular, roundish, obsoletely 3-angled, inflated, nerve-veined, beaked by the continuous style-base, the beak thick, deeply 3-furrowed, obtuse, with a solid point.—*Kunth, l. c. p. 535.*

Male spikes many, tufted at the apex of the culm, subcapitate; female distant, 1-2 in the axils of the leaves.—1 species.

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## ORDER CXLII. GRAMINEÆ.

Flowers hermaphrodite or unisexual, in spikelets, which consist of 3 or more (rarely 2 or 1) chaff-like glumes (scales or bracts), which are arranged alternately on opposite sides of the spikelet, and are convex outwardly. Two (sometimes 1 or 3) lowest glumes empty, often differently shaped from the others, the succeeding or flowering glumes (lower paleæ of many authors) each enclosing a small scale (palea). Within the palea, or between it and the flowering glume, is the real flower, consisting of 2, rarely 3 or 6, microscopic scales, together with 3, rarely 1, 2 or 6 stamens, and 1 ovary. Scales (lodicules or squamules of authors) generally 2 and lateral. Stamens with slender filaments and linear, rarely oblong, 2-celled, versatile anthers. Ovary 1-celled; style divided into 2-3 long or short feathery stigmas, rarely simple; ovule 1, erect. Fruit a 1-seeded caryopsis (or grain), free or often adherent to the palea or to both the palea and flowering glume, both or one of which may be hardened; pericarp very thin, usually closely adherent to the seed. Seed with a lateral furrow; testa extremely thin, adherent to the farinaceous albumen and (usually equally thin) pericarp; embryo minute, at the base of the albumen.—The Grasses are annual or perennial herbs, rarely arborescent, as the Bamboo, with cylindric or compressed, never 3-angled, stems (culms), which are jointed, and almost invariably hollow except at the nodes. Leaves alternate, entire, parallel-veined, usually long and narrow, sheathing at the base; sheathing part distinct from the blade, split to its junction with the culm, and usually provided with a membranous ring or appendage where the blade joins it. Spikelets generally arranged in terminal spikes, racemes or panicles.

The study of the great Order of Grasses, the most widely distributed of all flowering plants, and most useful to man, has occupied the attention of many able botanists, who are far from agreed as to the exact nature of their floral envelopes; that is to say, as to what organs of other plants they are the counterparts. The Cape genera not having been worked up by Dr. Harvey, are here supplied by his and my friend Colonel Munro, the only living botanist who is familiar with this difficult Order. The arrangement, limitation, and characters of the tribes and subtribes are also Colonel Munro's, and, being here for the first time published, they will be studied by botanists with great interest. In adopting for the floral envelopes the terms Flowering glumes, Palea, etc., Colonel Munro follows the course adopted in the Colonial Floras, but is by no means satisfied that they express truly the relationship of these organs, and is decidedly of opinion that the term lower palea should replace that of flowering glume. The ordinal characters I have taken from Mr. Bentham's '*Flora Hong-kongensis*.'—*J. D. H.*

*Analysis of Tribes and Subtribes.*

Tribe 1. **Paniceæ**, *R. Br.*—Spikelets articulated closely below the lowest glume, 2- very rarely 3-flowered. Upper glume always containing the most perfect and only fertile flower. Axis of spikelet never, *Bluffia* excepted, produced beyond the flowering glume. Scales never more than 2.—(In subtribe *Mayadeæ* the spikelets are monœcious and the sexes dissimilar, and occupy different parts of the panicle.)

Subtribe 1. **EUPANICEÆ**. Flowering glume never awned with a twisted awn, occasionally mucronate, never bearded at the base. Empty and flowering glumes frequently similar in consistence. Flowering glume and palea generally hardening in fruit and always enclosing the grain, which is shorter than the palea. Palea of fertile flower never deficient.

Subtribe 2. **TRISTEGINÆ**. Flowering glume (in Cape species) bearded at base and awned with a twisted awn. In other respects as in *Eupaniceæ*.—Panicle generally loose.

Subtribe 3. **ANDROPOGINÆ**. Flowering glume very often awned with a twisted awn, and palea never hardening in fruit, often extremely thin and always thinner than the barren glumes. Grain often longer than the palea, which is occasionally absent.—Spikelets generally placed 2 together, often very dissimilar, not inserted in hollows of the rachis.

Subtribe 4. **MAYADEÆ**. Spikelets monœcious, occupying different parts of the panicle. Males very numerous. Females few, generally concealed in a somewhat bony (hardened) involucre.

Tribe 2. **Phalarideæ**, *Munro*.—Spikelets articulated sometimes as in *Paniceæ*, and sometimes at the base of the pedicels, near the main axis, 3- or apparently 1-flowered. Outer empty glumes laterally compressed, often united at base, longer than the rest. Flowering glume terminal, generally hairy, with 2 rudimentary glumes below it. Otherwise as in *Paniceæ*.—(Intermediate between *Paniceæ* and *Poaceæ*.)

Tribe 3. **Poaceæ**, *R. Br.*—Spikelets always (except in *Fingerhuthia*) articulated above the lowest glume, 1- or many-flowered.—Lowest flower, with very few exceptions, perfect; terminal flower never (except in two genera of *Bambuseæ*) more perfect than those below it. Axis of the spikelet almost invariably terminated by an imperfect glume, which is frequently reduced to a small point or bristle. Scales 3 in *Stipacæ* and *Bambuseæ*, 2 in all other subtribes. Stamens 1-3, rarely 6. Fruit always shorter than the flowering glume.

Subtribe 1. **AGROSTIDÆ**. Spikelets with one flowering glume and an occasional rudiment of a second. The callus, inside the empty glumes, generally rounded and often bearded. Flowering glume thin. Awn, if present, dorsal, slender, and not twisted.

Subtribe 2. **STIPACÆ**. Spikelets always 1-flowered. Callus generally sharp-pointed. Flowering glume thickened and (except in *Lasiagrostis*) closely enveloping the palea. Awn always present, terminal, simple or 3-cleft, frequently twisted. Scales 2-3.

Subtribe 3. **ORYZÆ**. Spikelets 1-3-flowered, laterally compressed, only 1 flower perfect. Lowest glumes generally rudimentary, often almost obsolete. Flowering glume occasionally awned with a terminal awn, which is never twisted. Scales 1-2. Stamens (in the Cape species) 6.

Subtribe 4. **CHLORIDEÆ**. Spikelets rarely 1-, generally several-flowered, sessile, or in *Leptochloa* very shortly pedicellate, on the under side of a flattened, unjointed rachis. One or two of the lowest flowers occasionally abortive or imperfect. Lowest glume very persistent, generally strongly keeled and 1-nerved. Awn of flowering glume, if present, not twisted. Ovary never hairy at top. Seed free or enclosed in a loose pericarp.

Subtribe 5. **AVENACEÆ**. Spikelets 2- or many-flowered, pedicellate, their rachis generally slender, 1 or 2 lowest flowers occasionally male or neuter. Axis always prolonged into an imperfect or rudimentary glume. Lowest glume membranous, often equalling or exceeding the flowering glumes. Flowering glume rarely blunt, generally awned on the back or between the teeth, with a mostly twisted or bent awn. Ovary occasionally hairy at top, either free or adnate to the palea.

Subtribe 6. **FESTUCACEÆ**. Spikelets rarely 2-, generally many-flowered, pedicellate or very rarely almost sessile, axis always? prolonged into an imperfect glume which is generally rudimentary or bristle-like. Flowering glume, (in *Pappophorum* multifid,) often entire and blunt, sometimes awned, but the awn is never twisted and, except perhaps in *Bromus*, is always terminal. Empty glumes generally as thin or thinner than flowering glumes, the lowest occasionally absent. Fruit free or adnate to the palea. Styles always 2, except perhaps in *Ceratochloa*. Scales 2.—(In *Ehrharta* the 2 lowest florets, and in *Phragmites* the lowest are sterile.)

Subtribe 7. **BAMBUSEÆ**. Spikelets (in Cape genera) many-flowered with the axis prolonged into an imperfect glume. Scales 3. Stamens 3 or 6. Styles 2 or 3.—Arboreous or shrubby grasses. Leaves articulated at base.

Subtribe 8. **HORDEACEÆ**. Spikelets 1- or many-flowered, sessile or very shortly pedicellate on opposite sides of a zigzag, jointed rachis, either solitary or 2-3 together. Empty glumes not keeled, unequally nerved, standing at right angles to the axis of the spike, upper one sometimes deficient. Otherwise as in *Festuceæ*.

### *Analysis of Genera.*

#### TRIBE 1. **Panicææ**.

##### Subtribe 1. **EUPANICEÆ**.

- (a) Spikelets apparently 1-flowered, generally almost sessile and on one side of a flattened rachis. Lowest glume always obsolete; lowest flower always neuter. Flowering glume and palea hardening in fruit.—Glumes nearly always thick . . . . . 1. **PASPALUM**.

Spikelets arranged in a compact, spike-like panicle. Flowering glume and palea not hardening conspicuously in fruit. Flowering glume of lowest spikelets with several rows of hooked bristles . . . . . 2. **TRAGUS**.

- (b) Spikelets evidently 2-flowered.—(In *Bluffia* incompletely 3-flowered. In some species of *Panicum* the lowest glume is extremely small and almost obsolete.)

† Spikelets naked (not surrounded by an involucre), never more than 2 together on the same pedicel.

Lowest flowering glume neuter or male.

Flowering glume and palea (the latter generally flattened) hardening in fruit.

The 2 lowest glumes generally not very dissimilar and almost exactly opposite. Inflorescence almost every form of panicle.

(In the subgenus *Digitaria* the lowest glume is generally very small, and the spikelets are arranged mostly in pairs on one side of digitate or clustered rachis. In subgenus *Orthopogon* the 3 lowest glumes are generally long pointed and strongly nerved) . . . . .

3. PANICUM.

Spikelets on very short, few-flowered racemes, which are more or less deeply immersed in alternate hollows on one side of the thickened rachis of the solitary, terminal spike.—Leaves flat. Otherwise as in *Panicum* . . . . .

4. STENOTAPHRUM.

*Anomalous Genus*.—Axis of the spikelet prolonged into a delicate filament (rudimentary glume). All the glumes and paleæ mucronate, the flowering ones not hardening conspicuously in fruit. Both flowers contain scales. Paleæ remarkably eared on each side towards the base.—Spikelets arranged in digitate racemes. Leaves generally hairy . . . . .

5. BLUFFIA.

†† Spikelets involucred at their base.—The involucre is extremely short, little more than a beard in *Tricholæna*.

Involucre of uniform bristles, persistent, principally placed on one side of the spikelet. Flowering glume and palea much hardened in fruit, and the glume generally wrinkled on its outer surface.

—Spikelet generally gibbous . . . . .

6. SETARIA.

Involucre persistent, of 2 forms, some of the bristles being feathered and some simply scabrous, completely surrounding the spikelet. 2 lowest glumes very small. Anthers penicillate. Grain obovate . .

7. PENICILLARIA.

Involucre extremely short, beard-like, falling off with the spikelet, which is silkily hairy, terminal and solitary on a long, slender pedicel. Glumes distant and alternate, the 2 lowest extremely dissimilar. Flowering glumes very small. . . . .

8. TRICHOÏÆNA.

Involucre (falling off with solitary spikelet) composed of scabrous bristles, uniform in structure, unequal in length, 1 bristle extremely long.—Inflorescence densely spicate. Styles united at base . . . .

9. GYMNOTHRIX.

Involucre embracing 2-3 spikelets, composed of 2 kinds of bristles, some long feathered



towards the base, others merely scabrous.

Otherwise as in preceding. . . . . 10. PENNISETUM.

Involucre becoming very hard, (composed of the thickened lower glumes of the spikelets, which are united at their base,) enclosing 4-6 or more spikelets placed at the top of a common pedicel. Scales absent. 11. ANTHEPHORA.

Subtribe 2. TRISTEGINEÆ.

Spikelets small, scattered along the branches of a compound panicle. Awn slender . . . . 12. ARUNDINELLA.

Spikelets large, 1-3 together at the end of the branchlets. Awn strong,  $1\frac{1}{2}$ -2 inches long . 13. TRISTACHYA.

Subtribe 3. ANDROPOGINEÆ.

α. Spikelets apparently 1-flowered. Lowest glume absent. Barren glume with a simple not twisted awn. Panicle dense, spike-like . . 14. PEROTIS.

β. Spikelets evidently 2-flowered, 3 glumes present.

\* Spikelets in pairs equally fertile.

† Glumes all awnless.

Spikelets indented in the axis of a flattened rachis . . . . . 15. HEMARTHRIA.

Panicle dense, cylindrical, lowest glumes thin . . . . . 16. IMPERATA.

Panicle much divided, dense, lowest glume very thick . . . . . 17. ERIOCHRYSIS.

†† Flowering glume with a twisted awn.

One fertile and one neuter flower in each spikelet.

Panicle much divided. Main rachis not jointed . . . . . 18. EULALIA, *Trin.*

Panicle composed of 3-5 rather slender, spike-like branches . . . . . 19. POLLINIA, *Trin.*

One fertile and one male flower in each spikelet . . . . . 20. SPODIOPOGON.

\*\* Spikelets in pairs, only one fertile.

Pedicelled spikelet fertile, lowest one sessile, male . . . . . 21. TRACHYPOGON.

Pedicelled spikelet, male or neuter, seldom awned.

Fertile spikelet not awned.

Lowest glumes of fertile spikelet empty, taper-pointed or 2-fid . . . . . 22. ELIONURUS.

Lowest glume of fertile spikelet male, glume of one or both spikelets prolonged into a very long beak . . . 23. VOSSIA.

Fertile spikelet awned, almost sessile.

Fertile spikelet cylindrical. Upper flower female, strongly awned, pedicellate; male flat. Spike simple, solitary . . . . . 24. HETEROPOGON.

Fertile spikelets generally flattened, with lowest glume prominently nerved in jointed spikes or spike-like branches.

- Articulation of spikelet generally oblique . . . . . 25. *ANDROPOGON*.
- Fertile spikelets ovate, rounded on the back, in a decompound panicle with unjointed branches. Articulation of spikelets transverse. Lowest glume thickened, inconspicuously nerved in the middle . . . . . 26. *SORGHUM*.
- \*\*\* Spikelets in threes, central sessile hermaphrodite, two lateral pedicellate, male, terminating the branches of an open panicle . . . . . 27. *CHRYSOPOGON*.
- Spikelets fascicled, 4 or 6 neuter or male, spikelets surrounding the solitary fertile one . . . . . 28. *ANTHISTIRIA*.
- Subtribe 4. *MAYADEÆ*.
- Male spikelets numerous towards the top, female spikelet solitary at the base of the unjointed fascicled spikes . . . . . 29. *COIX*.
- TRIBE 2. *Phalaridæ*.
- Flowering glume awnless, with 2 rudimentary glumes between it and the 2 outer empty glumes. Stamens 3 . . . . . 30. *PHALARIS*.  
(*Hierochloë* and *Holcus* will be found in *Avenaceæ*.)
- TRIBE 3. *Poaceæ*.
- Subtribe 1. *AGROSTIDÆ*.
- a. None of the glumes awned or pointed or mucronate.
- Flowering glume sessile, naked at base, generally 1-nerved. Grain loose in pericarp . . . . . 31. *SPOROBOLUS*.
- β. Outer glumes either awned or pointed or mucronate.
- Outer glumes nearly equal, acute, not much longer than the flowering 3-5-nerved glume, which in all the Cape species is awned on back.—Callus with a short beard or naked. Terminal rudimentary glume often visible . . . . . 32. *AGROSTIS*.
- Outer glumes long awned, longer than the awned flowering glume. Callus not bearded . . . . . 33. *POLYPOGON*.
- Callus bearded with hairs, which are as long as flowering glume . . . . . 34. *CALAMAGROSTIS*.
- Subtribe 2. *STIPACÆ*.
- Awn simple, scarcely twisted, between the lobes of the 2-fid, silky, flowering glume . . . . . 35. *LASIAGROSTIS*.
- Awn simple, much twisted, terminal at the undivided point of the coriaceous flowering glume . . . . . 36. *STIPA*.
- Awn 3-fid between the lobes of the 2-fid or emarginate flowering glume . . . . . 37. *STIPAGROSTIS*.
- Awn 3-fid, terminal at the undivided point of the flowering glume . . . . . 38. *ARISTIDA*.
- Subtribe 3. *ORYZÆ*.
- Outer glumes obsolete. Flowering glume and palea rigid, herbaceous . . . . . 39. *LEERSIA*.

Outer glumes short but visible, flowering glume and palea membranous . . . . . 40. *MALTEBRUNIA*.  
(*Oryza* (Rice) is only known in a cultivated state. *Ehrharta* will be found in *Festuceæ*.)

Subtribe 4. *CHLORIDÆ*.

Spikes simple, solitary, terminal.

Spikelets 1-flowered, indented in the rachis.

Flowering glumes hairy . . . . . 41. *MICROCHLOA*.

Spikelets 4-5-flowered, 2 lowest flowering glumes sterile, 3rd fertile . . . . . 42. *CTENIUM*.

Spikelets 4-flowered, lowest flowering glume fertile, upper sterile . . . . . 43. *HARPECHLOA*.

Spikes 2 or more together, digitate or fascicled, rarely somewhat paniced.

Spikelets with 1 perfect flowering glume and a rudimentary upper one, both outer glumes pointless . . . . . 44. *CYNODON*.

Spikelets with 1 perfect flowering glume and rudimentary upper one, 2nd outer glume awned below the apex . . . . . 45. *EUSTACHYS*.

Spikelets many-flowered, several flowering glumes and a terminal imperfect one. Flowering glume pointed . . . . . 46. *DACTYLOCTENIUM*.

Spikelets narrow, many-flowered; several perfect flowering glumes, terminal one imperfect. All glumes awnless and blunt . . . . . 47. *ELEUSINE*.

Spikelets many-flowered, 1-3 perfect flowering glumes and several imperfect. Flowering glumes long-awned . . . . . 48. *CHLORIS*.

Spikes racemose paniced or glomerate.

Spikelets 1-flowered . . . . . 49. *SPARTINA*.

Spikelets several-flowered, two lowest flowering glumes sterile. Spikes few, 4-7 . . . . . 50. *TETRACHNE*.

Spikelets shortly stalked, several-flowered, lower flowering glumes perfect, in racemose spikes. . . . . 51. *LEPTOCHLOA*.

Spikelets very shortly stalked, several-flowered, lower flowering glumes perfect, in compound and decompound racemes . . . . . 52. *DIPLOCHNE*.

Subtribe 5. *AVENACEÆ*.

Spikelets with lowest flower only fertile, upper rudimentary or male.

Lowest flowering glume very thick and strongly awned; upper rudimentary . . . . . 53. *ANISOPOGON*.

Lowest flowering-glume awnless; upper male, or in the Cape species neuter, awned . . . . . 54. *HOLCUS*.

Spikelet, except in 1 Cape species of *Trisetum*, with 2 or more lower flowers fertile.

Flowering glume never awned . . . . . 55. *ACHNERIA*.

Flowering glume with a slender awn between the middle and base. Spikelets small, oblong or ovate . . . . . 56. *AIRA*.

Flowering glume long-awned, cleft at the top into 2 acute-pointed teeth.

- Awn between the teeth of flowering glume  
proceeding from the 3 united middle nerves. 57. *DANTHONIA*.
- Awn below the top proceeding from mid-  
nerve only.
- Flowering glume compressed, keeled.  
Awn bent or flexuous . . . . . 58. *TRisetum*.
- Flowering glume rounded on back. Awn  
twisted . . . . . 59. *AVENA*.
- Spikelet with lowest flowering glume imperfect.
- Outer glumes 3-nerved . . . . . 60. *TRICHOPTERYX*.
- Outer glumes many-nerved . . . . . 61. *CHÆTOBROMUS*.
- Spikelets with 2 lowest flowering glume male or  
neuter, awned; upper fertile, awnless . . . 62. *HIEROCHLOA*.
- Subtribe 6. *FESTUCACEÆ*.
- Stamens never more than 3.
- Spikelet articulated below the outer glumes (as  
in *Panicææ*), 2-4-flowered . . . . . 63. *FINGERHUTHIA*.
- Spikelet articulated above the outer glumes,  
which are persistent.
- Grain free, not adhering to upper palea.
- Rachis of spikelet bearded with long hairs.
- Lowest flowering glume hermaphrodite. 64. *ARUNDO*.
- Lowest flowering glume male or neuter. 65. *PHRAGMITES*.
- Rachis of spikelet not bearded with long  
hairs.
- One or both outer glumes 5- or more-  
nerved.
- Flowering glume many-nerved, deeply  
divided into 9-13 nearly equal  
points . . . . . 66. *PAPPOPHORUM*.
- Flowering glume 9-nerved, obovate,  
2-fid at top . . . . . 67. *SCHISMUS*.
- Flowering glume 7-nerved, with a  
very long flexuous point . . . . . 68. *UROCHLÆNA*.
- Flowering glume faintly 9-nerved,  
very thin, acute- or short-pointed . 69. *LASIOCHLOA*.
- Flowering glume many-nerved, coria-  
ceous, pointless or acute (Cape spe-  
cies with club-shaped hairs on back) 70. *BRIZOPYRUM*.
- Flowering glume 7- or more-nerved,  
flattish-convex, membranous at top,  
blunt (in Cape species with very  
long silky hairs on back) . . . . . 71. *MELICA*.
- Flowering glume obsoletely 3-nerved,  
blunt or with very short point . . . 72. *CHONDROLÆNA*.
- Outer glume never more than 3-nerved.
- Flowering glume pointed, awned or  
acute; nerves, when present,  
running into the point.
- Flowering glume herbaceous,  
pointed, compressed, keeled.  
Panicle contracted, branchlets in  
1-sided clusters . . . . . 73. *DACTYLIS*.
- Flowering glume membranous,

- keeled, acute or awned or rarely blunt. Panicle contracted, spike-like . . . . . 74. *KÆLERIA*.
- Flowering glume and palea pointless, thick, the nerves parallel.
- Flowering glume convex or rounded on back, faintly 5-nerved . . . 75. *ATROPIS*.
- The section of *Festuca*, called *Schænodorus*, would come here . . . 79. *FESTUCA* (sect. *Schænodorus*).
- Flowering glume generally compressed, keeled, 5-nerved, membranous; palea falling off with flowering glume . . . . . 76. *POA*.
- Flowering glume keeled, 3-nerved, deciduous; palea persistent . . 77. *ERAGROSTIS*.
- Grain adhering to palea, except in the sect. *Schænodorus* of *Festuca*.
- Spikelets all similar, equally fertile.
- Flowering glume rounded at back, very obtuse, pointless, many-nerved . . 78. *BRIZA*.
- Flowering glume rounded on back, acute pointed or awned at top, few-nerved. 79. *FESTUCA*.
- Flowering glume convex or keeled on back, mostly awned or bristle-bearing below the 2-cleft top, 5-9-nerved.
- Grain not 3-horned or angled . . . 80. *BROMUS*.
- Grain 3-horned, otherwise as in *Bromus* 81. *CERATOCYRLOA*.
- Spikelets dissimilar, some fertile, some sterile . . . . . 82. *CYNOSURUS*.
- Stamens 6, rarely 3.
- Two lowest flowering glumes male or neuter, very unlike the solitary fertile one . . . 83. *EURHARTA*.
- Subtribe 7. *BAMBUSEÆ*.
- Spikelets with only 1 perfect flowering glume, nearly sessile. Stamens 6. Stigma deeply 3-fid 84. *NASTUS*.
- Subtribe 8. *HORDEACEÆ*.
- Spikelets placed singly at each joint of the rachis.
- Spikelets decidedly sessile.
- Spikelets 1-flowered, with a terminal rudimentary glume, somewhat immersed in the rachis . . . . . 85. *MONERMA*.
- Spikelets several-flowered, 1 glume obsolete; ovary glabrous . . . . . 86. *LOLIUM*.
- Spikelets several-flowered, both glumes present; ovary hirsute . . . . . 87. *TRITICUM*.
- Spikelets shortly pedicellate . . . . . 88. *BRACHYPODIUM*.
- Spikelets placed in threes at each joint of the rachis . . . . . 89. *HORDEUM*.

TRIBE 1. *PANICEÆ*.

SUBTRIBE 1. *EUPANICEÆ*.

1. *PASPALUM*, Linn.

Spikelets in slender unilateral spikes, 1-flowered, not awned



nor callous at base. Outer glumes 2, both empty. Flowering glume concave, of a firmer texture. Palea like the flowering glume, but smaller and 2-nerved. Grain enclosed in the hardened palea and flowering glume.—*Nees, l. c. p. 15*; *Benth. Fl. Hongk. p. 408*.

Grasses of variable habits.—1 Cape species.

## 2. TRAGUS, Hall.

Spikelets racemose, 2-5 on common short pedicels, 1-flowered. Outer glumes 2; the lower minute, flat, thinly membranous; the upper (a barren flower, *vide Nees*) concave, cartilaginous, in the lowest spikelets covered with hard, rough points. Flowering glume and palea oblong, acute, papery-membranous, concave, the flowering glume embracing the shorter, 2-nerved palea. Grain oblong, glabrous, enclosed in the flowering glume and palea.—Lappago, *Schreb.*; *Kunth, Enum. i. p. 169*; *Nees, l. c. p. 72*.

Small, rigid grasses, with annual roots.—1 or 2 species.

## 3. PANICUM, Linn.

Spikelets either in slender unilateral spikes or in close-cylindrical or diffusely-branched panicles, 1-2-flowered; the lower flowers, when present, male. Glumes always 4, the lowest small or very small, empty; the next larger and empty; the third empty or with an imperfect or male flower; the innermost or flowering glume of a firmer texture, more faintly nerved. Palea like the flowering glume, but smaller and 2-nerved. Grain enclosed in the hardened flowering glume and palea.—*Nees, l. c. p. 20*; also *Oplismenus, l. c. p. 60*; *Benth. Fl. Hongk. p. 409*.

A vast genus, chiefly tropical; several yield food for man.—40 or 42 Cape species, chiefly on or beyond the Eastern frontier.

## 4. STENOTAPHRUM, Trin.

Spikelets in spikes, 2 or more inserted in alternate hollows along a broad, flattened, unjointed rachis, 2-flowered. Outer glumes 2, the lower smaller. Lower flower male; upper hermaphrodite or female. Flowering glume and palea coriaceous, the former concave, enclosing and clasping the latter. Grain free, glabrous.—*Nees, l. c. p. 62*.

1 Cape species.

## 5. BLUFFIA, Nees.

Spikelets in digitate racemes, 2-flowered, with a rudimentary third flower. Outer glumes 2, membranous-herbaceous, su-

bulate-acuminate, the lower smaller 3-nerved, the upper 5-nerved. Lower flower male; its flowering glume like the upper outer glume, subulate-acuminate; its palea 2-parted, membranous, shorter, the segments acuminate, eared in front and clasping the stamens. Upper flower hermaphrodite, the flowering glume and palea subequal, taper-pointed; the former convex, with an awn-like point; the latter dorsally concave, mucronate, eared on each side at base, the ears clasping the flowers.—*Nees, l. c. p. 61.*

*B. Eckloniana*, Nees, is a handsome grass, common to the east of Uitenhage.

### 6. SETARIA, Beauv.

Spikelets generally swollen on one side, in dense spiked panicles, or apparently cylindrical spikes, 2-flowered, awnless, with a persistent involucre (abortive branchlets), composed of simple scabrous bristles, principally placed on one side. Outer glumes 2, the lowest very short. Lower flowers male or neuter; upper flowers hermaphrodite; the flowering glumes often mucronate, generally wrinkled on the back, and often marked on each side with a curious horseshoe-shaped impression; otherwise as in *Panicum*.—*Panicum, Nees, l. c. p. 52-56; Kunth, Enum. p. 149.*

A widely-distributed genus, affording good fodder grasses.—8 species at the Cape.

### 7. PENICILLARIA, Willd.

Spikelets 2-flowered, in a spike-like raceme, each 1-2 spikelets with an involucre of 2 sorts of bristles; the outer bristles short, scabrid; the inner longer, mostly plumose towards the base. Outer glumes 2, very short, membranous, nearly nerveless. Lower flower either neuter and 1-valve or male 2-valved; its flowering glume entire or emarginate. Upper flower hermaphrodite, rarely female; the flowering glume and palea convolute, papery, either entire, truncate or 2-fid, hardening in fruit. Anthers bearded at the apex. Grain enclosed in the flowering glume and palea.—*Nees, l. c. p. 71.*

Usually tall grasses, affording a millet in several species,—*P. Plukenetii* is in Drège's collections, and *P. spicata* in Burchell's.

### 8. TRICHOLÆNA, Schrad.

Spikelets in diffuse panicles, 2-flowered. Outer glumes 2, membranous, softly silky, the lower very small or reduced to a silky ring; upper as long as the lower flowering glume, mucronate or setigerous below the 2-fid apex. Lower flower male or neuter, its flowering glume very like the upper outer

glume; palea smaller, 2-dentate, closely wrapping the stamens. Upper flower hermaphrodite, smaller than the male, its flowering glume and palea rigid. Grain enclosed in the hardened flowering glume and palea.—*Nees, l.c. p. 16.*

Elegant grasses, with slender panicles of silky, white or rosy flowers.—5 Cape species.

*Rhynchelytrum*, Nees, l.c. p. 64, seems to be the same genus with rather longer and harsher spikelets, and longer points or awns to the 2nd and 3rd glumes.

### 9. GYMNOTHRIX, R. Br.

Spikelets and flowers of *Panicum*, but each spikelet surrounded by an involucre of long, simple, unequal, awn-like bristles, and all arranged in a long, cylindrical, simple and dense spike or raceme.—*Nees, l.c. p. 65; Benth. l.c. p. 413.*

4 Cape species.

### 10. PENNISETUM, Beauv.

Spikelets 2-flowered, spiked, each with an involucre of two sorts of bristles; the outer bristles short, slender, scabrous; the inner longer (very unequal), feathery in the lower half. Outer glumes either 2, the lower minute; or 1, the lower being deficient; membranous, subscarious, acute. Lower flower male, with flowering glume and palea, or neuter without palea; the flowering glume membrano-scarious, 3-fid. Upper flower either hermaphrodite or female. Glume and palea convolute, papery, ciliate at the apex, hardening in fruit. Grain free, enclosed in the flowering glume and palea.—*Nees, l.c. p. 70.*

1 Cape species.

### 11. ANTEPHORA, Schreb.

Spikelets 1–5, in a 4–5-fid hardening involucre, composed of the united lower glumes, arranged in simple, unjointed spikes. Second glume membranous, subulate, short; supporting a neuter, membranous flowering glume, and above it a hermaphrodite flowering glume. Flowering glume and palea of the fertile flower papery, concave, subequal, hardening in fruit and enclosing the mucronulate grain.—*Nees, l.c. p. 73.*

*A. pubescens*, Nees, found on the Gariep by Lichtenstein.

#### SUBTRIBE 2. TRISTEGINEÆ.

### 12. ARUNDINELLA, Raddi.

Spikelets 1-flowered or with a second (lower) male flowers in a loose panicle. Glumes 4; the 2 lowest empty, pointed, but not awned; the third smaller, similar, but often with a

male flower in its axil; the terminal flowering one smaller, thinner, with an awn twisted at the base, and bent back at or below the middle; palea smaller, awnless. Grain enclosed in the slightly stiffened glume and palea.—*Nees, l.c. p. 79; Benth. Fl. Hongk. p. 415.*

2 Cape species.

### 13. TRISTACHYA, Nees.

Spikelets in threes or solitary, at the ends of the branches of a panicle, containing 1 fertile pedicellate flower, and a neuter or male rudimentary glume. Lowest outer glume shorter, mucronate. Flowering glumes herbaceous; those of the barren flower 3-toothed at apex; of the fertile bearded at base, 2-fid, with a long, basally twisted awn between the lobes.—*Nees, l.c. p. 266.*

Coarse grasses, with large, hairy spikelets, somewhat resembling those of the Live Oat (*Avena fatua*).—1 or 2 Cape species.

#### SUBTRIBE 3. ANDROPOGONEÆ.

### 14. PEROTIS, Ait.

Spikelets 1-flowered, lanceolate, small, on minute pedicels, closely placed in a simple spike. Outer glumes 2, subequal, half membranous, tapering into a long, slender bristle. Flowering glume and palea membranous, hyaline, either subequal or the glume larger, lanceolate, the palea small, subulate. Grain free, enclosed in the glumes.—*Nees, l.c. p. 139; Benth. l.c. p. 418.*

*P. latifolia*, Ait., a widely-diffused tropical grass, occurs at Natal. Culm slender, leafy in its lower parts; the spike 2-4 inches long, barren in the lower parts; leaves short and broad, spreading, taper-pointed.

### 15. HEMARTHRIA, Br.

Spikelets solitary, half-sunk in hollows of the unjointed rachis of a simple spike, with 1 flowering glume, which is sometimes male or neuter. Empty glumes 3; the lowest rigid, nerved; the next boat-shaped, somewhat thinner but rigid; the third membranous. Flowering glume membranous; palea also membranous, but smaller and narrow. Scales membranous, plaited, truncate, toothed, clasping the ovary. Grain free.—*Lodicularia, Beauv.; Nees, l.c. p. 127.*

*H. Capensis*, diffused through the colony, is a marsh or water-grass, with branching, leafy culms, the branches ending in simple spikes.

### 16. IMPERATA, Cyr.

Spikelets 1-flowered, awnless, pedicellate, in a dense, cylin-

dricul, spike-like panicle. Glumes thin and delicate; the two outer clothed with very long, silky hairs; the third smaller, glabrous, empty; the flowering glume and palea still shorter, broad, entire or toothed. Stamens 2. Stigmas long and narrow, plumose, reddish. Grain free, enclosed in the glumes.—*Nees, l.c. p. 88; Benth. Fl. Hongk. p. 419.*

*I. arundinacea*, Cyr., a common grass of warm countries, occurs on the Eastern frontier and at Natal.

### 17. ERIOCHRYISIS, Beauv.

Spikelets in pairs (the terminal in threes), 1-flowered, along the jointed branches of a much-divided panicle; 1 sessile, the other pedicellate, both fertile. Outer glumes 2, rigid, boat-shaped, nerved, pointless, nearly equal. Flowering glume and palea very thin and transparent, pointless; the glume longer and broader than the palea, concave, ciliate. Grain free.—*Kunth, Enum. i. p. 473.*

*E. pallida*, Munro, found at Magalisberg by Burke and Zeyher, is a rigid grass, with involute leaves, and a culm about 2 feet high, bearing a close panicle, clothed with long silky, fulvous hairs, a whorl of which surrounds every joint of the rachis, forming an involucre to each spikelet.

### 18. EULALIA, Trin.

Spikelets 1-flowered, in pairs, both pedicellate, along the slender, unjointed branches of a diffuse panicle, each spikelet girt at base with rufous hairs. Outer glumes 2, rigid, papery, pointless, villous, the lower 2-nerved; third glume also empty, thinner. Flowering glume very narrow, 2-fid, ending in a long awn; palea very small and narrow. Grain free.—*Erianthus, Nees, l.c. p. 92.*

Tall, rigid grasses, 3–4 feet high (like small reeds), with convolute leaves; the culm bearing a large, much-branched, softly hairy, fulvous panicle.—3 Cape species.

### 19. POLLINIA, Trin.

Spikelets 1-flowered, in pairs, 1 sessile, the other pedicellate along the spike-like branches of a simple panicle; the rachis jointed at each pair, each spikelet surrounded by silky hairs. 2 outer empty glumes, stiff, awnless; the lowest with 2 of the lateral nerves prominent, the central faint; second glume keeled, stiff; third also empty, smaller, thin and transparent; flowering glume small and thin, with a long awn, twisted at base. Grain free.—*Benth. Fl. Hongk. p. 420; Eulalia, Nees, l.c. p. 90.*

*P. villosa*, Munro (*Eulalia villosa*, Nees), a rather coarse grass, 1–2 feet high; the culm bearing 3–4 hairy, fulvous, awned spikes, is common on and beyond the Eastern frontier.—There are 3 or 4 other Cape species.



20. **SPODIOPOGON**, Trin.

Spikelets in pairs along the jointed, angularly-compressed rachis of simple or branched spikes, 1 subsessile, the other pedicellate, both 2-flowered; the lower flowers male. Outer glumes rigid, often hairy; the lower several-nerved (sometimes 2-fid); the upper keeled, pointed or 2-fid and setigerous. Flowering glume and palea thin and membranous, the glume of the fertile flowers 2-fid, with a twisted awn.—*Nees, l.c. p. 96; Benth. Fl. Hongk. p. 426.*

*S. arcuatus*, Nees, a grass with leafy culms, the leaves flat and much-acuminate, and bearing 2–3 fulvous spikes, is found in British Caffraria and Natal.

 21. **TRACHYPOGON**, Trin.

Spikelets cylindrical, in pairs along the slender rachis of solitary or tufted spikes; the lower male, pointless; upper female, awned. Lowest outer glume several-nerved; the next narrower, 3-nerved; a third empty hyaline. Flowering glume (in the fertile spikelets) very thin, narrowed at base, then linear-expanded, obtuse and ending in a long, more or less hairy, twisted awn.—*Nees, l.c. p. 99.*

*T. Capensis*, Nees, has a culm 1–2 feet high, flat, narrow leaves and solitary spikes.

 22. **ELIONURUS**, Kth.

Spikelets pointless, in pairs along the jointed axis of a simple spike; one male or neuter, pedicellate; the other sessile, with a hermaphrodite flower. Two outer glumes of the fertile spikelets rigid, but thin; the outer much larger, many-nerved, taper-pointed or 2-fid, silky without, the second smaller, keeled, entire; third also empty, shorter and thinner. Flowering glume still thinner, convolute. Scales truncate. Grain compressed, free.—*Nees, l.c. p. 94.*

Rigid grasses, with filiform leaves and nearly nude culms, ending in a silky and silvery spike.—Nees has 2 species, one of which, *E. argenteus*, is common in the Eastern district and at Natal.

 23. **VOSSIA**, Wall. and Griff.

Spikelets in pairs on each excavated joint of a flattened-jointed spike; sessile spikelets slightly sunk in the rachis, 2-flowered, lowest flowers male; upper fertile, both very membranous or transparent, pedicellate spikelets also 2-flowered; both flowers male or occasionally neuter, similar to those of sessile spikelets. Outer glumes 2, dissimilar, the outer very thick, in the pedicellate spikelets always, and in both

spikelets occasionally prolonged into a flattened hairy-margined ensiform point, 2–3 inches long. (In the Cape species this is only the case in the pedicellate spikelet.) Inner glume boat-keeled, not quite as thick as the outer. Flowering glume and palea very membranous and unusually large. Grain free, much shorter than the palea.—*Wall. et Griff. in Journ. As. Soc. Bengal.* v. (1836) p. 572; *Griff. Not.* p. 71; *Endl. Gen. Pl.* p. 1354.

Tallish grasses, with, in the 2 Cape species, solitary spikes more than 6 inches long. One (*Rottbællia hordeoides*, Munro, mss.) found on the Mori river by Burke, the other (Burchell, n. 2200) found by him at Litakun.

#### 24. HETEROPOGON, Pers.

Spikelets in pairs along the slender rachis of simple spikes; one sessile, cylindrical, female; the other male, shortly pedicelled. Lowest glume of the fertile spikelet rigid, convolute, truncate, the next keeled, the third very thin and membranous. Flowering glume reduced to a long, thick, hairy, twisted and flexuous awn. Male spikelets lanceolate, awnless. Grain free, enclosed in the glumes.—*Nees, l. c.* p. 100; *Benth. Fl. Hongk.* p. 424.

3 Cape species, with solitary or geminate spikes, narrow leaves and slender culms; *H. contortus* is common.—The lowest spikelets of the spike are frequently all male.

#### 25. ANDROPOGON, Linn.

Spikelets in pairs along the jointed rachis of solitary, geminate, tufted or panicle spikes; one sessile, fertile; the other shortly pedicelled, male or reduced to a glume. Outer glume of fertile spikelet rigid, with 2 lateral nerves stronger, the second keeled, the third very thin, transparent. Flowering glume very small and delicate, ending in or reduced to a long twisted awn. Grain free.—*Nees, l. c.* p. 103; *Benth. l. c.* p. 422; *Lepeocercis*, *Nees, l. c.* p. 97.

Rigid, rather coarse grasses, very various in habit; the spikes in some nude, in others enclosed in persistent, spathe-like sheathes.—16 Cape species.

In the subgenus *Schizachyrium* the spikes are solitary, slender, and almost cylindrical. The pedicelled spikelet rudimentary on a flattened pedicel.

In the subgenus *Lepeocercis* the spikelets are quadrifarious, 2 rows of male on one side, and 2 rows of females on the other side of the flattened rachis. All the lower glumes are very blunt, and often toothed at the apex.

#### 26. SORGHUM, Pers.

Spikelets at the ends of the twigs of a branching panicle, either fertile, male, or neuter, dissimilar. Outer glumes 2; in

the fertile and male spikelets coriaceous, hardening, with scarcely obvious, immersed nerves; in the neuter spikelets membranous, nerved. Flowering glumes thinly membranous, ciliate; the lower neuter; the upper fertile, with a short, twisted awn, or awnless; palea small, narrow. Scales fimbriate. Grain thick, short, hard, closely wrapped in the hardened glume and palea.—*Nees, l.c. p. 85.*

Tall, strong, broad-leaved grasses, with villous or pubescent glumes. Grain used for food in India.—2 Cape species.

## 27. CHRYSOPOGON, Trin.

Spikelets bearded at the base in threes at the ends of the branches of an erect panicle, central one sessile, hermaphrodite; 2 lateral ones pedicellate and male. Outer glumes 2; in the fertile spikelet the lower is 4-nerved, blunt or short-pointed, the inner decidedly keeled and long-pointed; lowest flowering glumes neuter, hyaline; upper fertile, long-awned, palea wanting; in the pedicellate spikelets both glumes are pointed, awnless, and without palea; one flower male, the other neuter. Grain small, oblong.—*Trin. Fund. p. 188; Icon. p. 331; Benth. l.c. p. 424.*

Erect, 1–2 feet high in Cape species, leaves fringed, somewhat waved.—1 Cape species, found near the Gariep by Burchell.

## 28. ANTHISTIRIA, Linn.

Spikelets heterogamous, in simple or 2–3-fid tufts, several sessile awnless male or neuter spikelets surrounding a single awned fertile sessile spikelet, and 2 male or neuter pedicelled ones. Structure of the fertile spikelets similar to that of *Andropogon*. Grain free, enclosed in the hardened glumes.—*Nees, l.c. p. 120.*

Grasses resembling *Andropogon*, differing in inflorescence.—4 Cape species; *A. ciliata* is common.

### SUBTRIBE 4. MAYADEÆ.

## 29. COIX, Linn.

Spikelets monœcious. Males above spiked in threes at the joints, 1 pedicelled and 2 sessile, all with 2 flowers; fertile sessile, 2-flowered; lowest flower neuter, upper female, supported by 2 neutral, pedicelled spikelets, which are occasionally abortive, remaining enclosed in the bony involucre, through the top of which the peduncle carrying the male spikelets emerges. Outer glumes in male spikelets 2, about equal in length, the lower flattened and winged on the margins, the upper keeled. Flowering glumes and paleæ membranous and

unawned. Stamens 3.—In fertile spikelets the outer glume is at first fleshy, becoming hardened and surrounding the inner, no palea to the neutral flower. Flowering glume and palea of female flower rather fleshy, unawned. Stamens effete. Fruit globose.—*Nees in Agrost. Bras. p. 310; P. et B. t. 24. p. 5.*

Pretty, striking-looking grasses, generally growing in damp spots.—One species (*C. lachryma*), is cultivated occasionally, the hardened bony involucre of which are called "Job's tears."

## TRIBE 2. PHALARIDÆ.

### 30. PHALARIS, Linn.

Spikelets crowded in an ovate, oblong or cylindrical dense panicle, with 1 perfect flowering glume and 1-2 imperfect, scale-like ones below it. Outer glumes 2, equal, keeled or dorsally winged, 3-nerved, larger than the flowering. Flowering glume subcoriaceous, entire, pointless, 5-nerved; palea entire, coriaceous, half-enclosed. Grain free, compressed, not furrowed, enclosed in the hardened flowering glume and palea.—*Nees, l. c. p. 5.*

2 Cape species. The common Canary-grass is a familiar example of this genus.

## TRIBE 3. POACEÆ.

### SUBTRIBE 1. AGROSTIDÆ.

### 31. SPOROBOLUS, R. Br.

Spikelets 1-flowered, awnless, in a loose or close and spike-like panicle. Outer glumes 2, rigid, subcarinate, mostly 1-nerved, the lower smaller or very small. Flowering glume nerveless or 1-3-nerved; palea subequal, 2-carinate. Grain free.—*Nees, l. c. p. 151.*

Annual or perennial grasses; leaves slender, often rigid, with involute margins; inflorescence much more rigid than in the following genera.—Several Cape species.

### 32. AGROSTIS, Linn.

Spikelets 1-flowered, usually in a diffuse panicle. Outer glumes pointless, keeled, the lower somewhat larger. Flowering glume shorter than the outer, membranous, pointless or dorsally awned; palea smaller, membranous, sometimes obsolete. Grain free.—*Nees, l. c. p. 147, 148, 150.*

*A. Bergina* is a slender, pale grass of the Western district.—*A. umbellulata*, Trin. (*Colpodium pusillum*, *Nees*), a somewhat doubtful species, is

a small grass, resembling *Poa annua*, found by Drège on Table Mountain. I have not seen it.

*A. Neesii* and *A. lachnantha*, Trin., (*Podosæmum lachnanthum* and *P. angustum*, Nees, l. c.), are slender annual grasses, with very pale, diffuse inflorescence.

### 33. POLYPOGON, Desf.

Spikelets 1-flowered, in a dense but much-branched oblong panicle. Outer glumes 2, equal, ending in a slender, straight awn. Flowering glume shorter, membranous, with or without an awn; palea small, thin.—*Nees, l. c. p. 143*; *Benth. l. c. p. 426*.

Annual grasses, often with knee-bent stems, and very pale inflorescence.—2 Cape species.

### 34. CALAMAGROSTIS, Adans.

Spikelets 1-flowered, in a compound panicle. Outer glumes membranous, channelled, subequal or the lower larger, much longer than the flowering. Flowering glume girt with long hairs, dorsally setigerous; palea 2-nerved.—*Nees, l. c. p. 162*.

*C. epigejos*, Roth, a European and N. Asiatic grass, occurs in the Western district, but rarely.

#### \* SUBTRIBE 2. STIPACEÆ.

### 35. LASIAGROSTIS, Link.

Spikelets diffusely paniced, 1-flowered, the flowering glume shortly stipitate. Outer glumes 2, membranous, pointless, longer than the flowering, the lower rather longer. Flowering glume subcarinate, silky, awned at the 2-fid apex, the awn slender, simple, scarcely twisted, not jointed; palea shorter, involute, 2-nerved. Ovary stipitate. Grain free, enclosed in the flowering glume and palea.—*Nees, l. c. p. 167*.

2 Cape species, Eastern.

### 36. STIPA, Linn.

Spikelets paniced, 1-flowered, the flowering glume stipitate. Outer glumes 2, membranous, pointless, longer than the flowering. Flowering glume and palea hard and dry, cylindrical, margins involute; the glume with a terminal, twisted awn, jointed at base, the palea much shorter, 2-nerved. Scales 3. Ovary stipitate.—*Nees, l. c. p. 169*.

A considerable genus, of which there are 2 Cape species.

### 37. STIPAGROSTIS, Nees.

Spikelets in racemose panicles, 1-flowered. Outer glumes



2, membranous, equal, longer than the flower. Flowering glume on a hard, raised point, papery, convolute, 2-lobed, between the lobes bearing a jointed, 3-fid awn; palea short, obtuse.—*Nees, l. c. p. 171.*

3 Cape species. Genus scarcely distinct from the following.

### 38. *ARISTIDA*, Linn.

Spikelets panicled or subracemose, 1-flowered, the flowering glume stipitate. Outer glumes 2, membranous, unequal, mostly pointless, the lower shorter. Flowering glume hard, convolute, awned at the apex, the awn 3-partite or 3-fid, with or without a joint at base. Palea minute. Grain terete, enclosed in the flowering glume.—*Kunth, Enum. l. c. p. 187. Arthratherum and Chætaria, Nees, l. c. pp. 174, 186.*

A widely-dispersed genus, containing about 15 Cape species.—The awn is jointed and caducous in *Arthratherum*; unjointed and persistent in *Chætaria*.

#### SUBTRIBE 3. ORYZEÆ.

### 39. *LEERSIA*, Soland.

Spikelets 1-flowered, compressed, racemoso-paniculate. Outer empty glumes 0. Flowering glume and palea herbaceous, rigid, compressed, keeled, pointless, closed, about equal in length. Stamens 1–3–6. Grain compressed, free, covered by the valves.—*Nees, l. c. p. 193.*

*L. Mexicana* is found in Uitenhage. Stamens 6 in this species.

### 40. *MALTEBRUNIA*, Kunth.

Spikelets 1-flowered, panicled. Outer glumes 2, small, membranous, channelled and keeled, pointless. Flowering glume and palea membranous, boat-like, subequal, compressed, the glume much the wider, pointless. Stamens 6.—*Nees, l. c. p. 194.*

*M. prehensilis*, found by Drége, is unknown to me. Culm much branched; leaves sessile, hairy on the margin and keel armed with recurved, minute prickles.

#### SUBTRIBE 4. CHLORIDEÆ.

### 41. *MICROCHLOA*, R. Br.

Spikelets 1-flowered, unilateral, in solitary spikes. Outer glumes 2, oblong, subacute, subequal, membranous, pointless, the lower 3-nerved, keeled. Flowering glume and palea shorter than the outer glumes, thinly membranous, transpa-

rent; the glume broadly ovate, truncate, concave, 3-nerved; palea 2-keeled.—*Nees, l. c. p. 246.*

*M. Caffra*, Nees, the only Cape species, is a tufted grass; leaves slender, rigid, curled, with involute margins; culms short, 1-spiked.—Eastern district.

#### 42. CTENIUM, Panz.

Spikelets in a double row along one side of a common rachis, with 1 fertile flowering glume, and 2 lower and 1–2 upper imperfect male or neuter glumes. Outer glumes 2; the lower minute, membranous, persistent, the upper herbaceous, with a reflexed, dorsal bristle. Imperfect flowering glumes, pointless or setigerous. Fertile flowering glume setigerous below the apex, keeled, ciliate; palea longer, 2-keeled.—*Nees, l. c. p. 237.*

Very beautiful grasses. *C. concinnum*, Nees, which is said to resemble the *C. elegans* of Senegal, was found by Drège near Natal; it is unknown to me.

#### 43. HARPECHLOA, Kunth.

Spikelets in a double row along one side of a common rachis, with 1 (lowest) flowering glume fertile and 3 upper neuter ones. Outer glumes 2, pointless, keeled; the outer longer than the spikelet, the inner thrice as short, persistent. Flowering glume and palea membranous, pointless; the glume obovate, keeled at back, and margins densely ciliate; palea scarcely shorter, 2-keeled.—*Nees, l. c. p. 238.*

*H. Capensis* is an elegant grass of the Eastern district.

#### 44. CYNODON, Rich.

Spikelet with 1 fertile and a rudimentary upper flowering glume sessile on one side of a rachis, in digitate or geminate spikes. Outer glumes 2, keeled, membranous, pointless, nearly equal. Flowering glume membranous, acute, keeled, sometimes mucronulate under the tip; palea 2-keeled, compressed.—*Nees, l. c. p. 241.*

Roots creeping; culms short; leaves rigid, margins involute.—4 Cape species, dispersed.

#### 45. EUSTACHYS, Desv.

Spikelets with 1 fertile and 1 (upper) sterile flowering glume, sessile, unilateral, in digitate spikes. Outer glumes 2, membranous, the upper awned below the emarginate apex. Flowering glume and palea membranous; the glume keeled, the palea 2-keeled.—*Nees, l. c. p. 248.*

*E. petraea*, a widely-diffused and very elegant grass, occurs in the Eastern district and Caffraria.

46. **DACTYLOCTENIUM**, Willd.

Spikelets 2-several-flowered, unilateral, in digitate spikes; flowers distichous. Outer glumes 2, compressed, keeled, shorter than the flowering, membranous, the upper awned. Flowering glume strongly keeled, subulate-aristate, 3-nerved, the lateral nerves near the margin; palea 2-nerved.—*Nees, l. c. p. 249.*

An annual grass, found in most hot countries; at Natal.

47. **ELEUSINE**, Gærtn.

Spikelets 2-several-flowered, unilateral in tufted spikes; flowering glumes distichous, imbricate. Outer glumes 2, keeled, membranous, pointless, shorter than the flower, the lower smaller. Flowering glume pointless, obtuse, entire, keeled, closely 3-nerved at back; palea 2-nerved, obtuse.—*Nees, l. c. p. 250.*

Tropical grasses, often cultivated.—*E. Indica* and *E. Coracana* occur in Caffraria and at Natal.

48. **CHLORIS**, Sw.

Spikelets 2-8-flowered, sessile along one side of a common rachis, in digitate spikes, 1-3 of the lower flowering glumes fertile, awned under the apex, the rest neuter, awned or pointless. Outer glumes 2, membranous, persistent, acute, the upper sometimes short-awned. Flowering glume 3-nerved, triangular-keeled, awned under the apex, and usually ciliated at the back and margin; palea 2-keeled, with a straight, unjointed awn. Grain elongate.—*Nees, l. c. p. 239.*

2 Cape species, Eastern.

49. **SPARTINA**, Schreb.

Spikelets 1-flowered, compressed, racemose. Outer glumes 2, rigid, keeled, unequal, the lower smaller, narrower, 1-nerved, upper 3-nerved, much larger. Flowering glume membranous, pointless, compressed-keeled; palea longer, boat-like, 2-nerved.—*Nees, l. c. p. 260.*

A widely-dispersed genus, of which there is 1 Cape species.

50. **TETRACHNE**, Nees.

Spikelets many-flowered, sessile in a compound spike. Outer glumes keeled, 1-nerved. Flowering glumes imbricated, with 2 interior empty glumes below the fertile ones. Flowering glume rigidly herbaceous, acutely keeled, 3-5-nerved, somewhat mucronate below the apex; palea subequal, sharply and prominently 2-keeled, subacute, with

inflexed edges. Ovary glabrous, stipitate.—*Nees, l. c. p. 375.*

*T. Dregei*, Nees, an Eastern district grass, is the only species.

### 51. **LEPTOCHLOA**, Beauv.

Spikelets 2-several-flowered, sessile, unilateral, in racemose spikes. Outer glumes 2, keeled, membranous, either shorter than the flowering or (as in our Cape species) rarely rigid, and longer than the flowers, pointless, persistent, keeled. Flowering glume membranous, 3-nerved, keeled, pointless, or mucronate or aristate; palea shorter, 2-keeled, with a straight, unjointed awn.—*Nees, l. c. p. 252.*

*L. grandiglumis*, Nees, is the only Cape species.

### 52. **DIPLACHNE**, Beauv.

Spikelets several-flowered, in compound racemes. Outer glumes unequal, the upper mucronate. Flowering glume 3-nerved, at the sides more or less silky or pubescent, 2-fid at apex, setigerous between the lobes.—*Nees, l. c. p. 254.*

Poa-like grasses, usually with livid or brownish flowers.—5 Cape species.

#### SUBTRIBE 5. AVENACEÆ.

### 53. **ANISOPOGON**, R. Br.

Spikelets loosely paniced, with 1 fertile, pedicellate flowering glume and a rudimentary one. Outer glumes 2, membranous, subequal, 3- or several-nerved, longer than the flowers. Flowering glume subcoriaceous, oblong, convolute, 2-fid, the segments setaceous, with a very long awn, twisted at base, between the segments; palea longer, 2-fid. Ovary stipitate.—*Nees, l. c. p. 265.*

*A. Capensis*, Nees, is an oat-like grass, found near Tulbagh.

### 54. **HOLCUS**, Linn.

Spikelets in a branching panicle, 2-flowered, the flowering glumes subdistant, the lower hermaphrodite, pointless, upper awned, often only male, or in the Cape species neuter. Outer glumes membranous, keeled, longer than the flowers. Flowering glumes and paleæ membranous, of about equal length, the former keeled, the lower awnless, the upper, which is 2-keeled, awned below the tip. Grain glabrous, free.—*Nees, l. c. p. 9.*

1 Cape species.

### 55. **ACHNERIA**, Beauv.

Spikelets 2-flowered, small, in loose or close panicles.

Flowering glumes sessile or subsessile, hermaphrodite. Outer glumes membranous, few-nerved, equal, pointless. Flowering glume concave, either pointless or with a terminal, simple point; palea 2-keeled.—*Nees, l. c. p. 273, sub Eriachne.*

Slender grasses, resembling *Aira*, and differing in the absence of a dorsal or basal awn.—7 Cape species.

I think this genus would be more correctly placed in *Festuceæ*. In true *Eriachne* the outer glumes are many-nerved; in the 7 Cape species they are 1- or 3-nerved.

#### 56. *AIRA*, Linn.

Spikelets 2-flowered, paniced. Outer glumes subequal, equalling the flower or longer, membranous. Flowering glume 2-fid or entire, with a slender, dorsal or nearly basal, knee-bent awn; lower sessile, upper pedicellate; palea 2-keeled.—*Nees, l. c. p. 272.*

*A. caryophyllea*, a common but very elegant annual European grass, is found in many parts of the colony. Culm 2-6 inches high, all parts very slender.

#### 57. *DANTHONIA*, DC.

Spikelets 2- or several-flowered, paniced or racemose. Outer glumes 2, membranous, subcarinate, pointless, subequal, equalling the flowering or longer. Flowering glume rather rigid, concave, many-nerved, 2-fid between the pointed or 1-2 bristle-tipped lobes, and there furnished with a basally-flattened and spirally-twisted or rarely straight awn; palea 2-keeled.—*Nees, l. c. p. 280.*

A large genus of rigid, often coarse grasses, the panicle sometimes loose, sometimes very dense and spike-like.—Upwards of 50 Cape species.

*D. radicans*, Steud. (*Trirhaphis Capensis*), *Nees, l. c. 270*, has all the points of the flowering glume more terete or cylindrical than usual. It is a slender grass, with narrow leaves and very pale inflorescence: found at Dutoits Kloof.

#### 58. *TRisetum*, Pers.

Spikelets 2-7-flowered, in close or racemose panicles. Outer glumes 2, membranous, keeled, pointed, 1-3-nerved. Flowering glume herbaceous, 3-5-nerved, 2-fid and setigerous at apices of lobes, with a dorsal, twisted or bent awn, rising from the mid nerve; palea 2-keeled, 2-fid.—*Nees, l. c. p. 345.*

Grasses resembling *Danthonia*.—6 Cape species.

#### 59. *AVENA*, Linn.

Spikelets 2-many-flowered, paniced. Outer glumes unequal, rigidly membranous, often longer than the flowering, lower 1-9-nerved, upper 3-11-nerved. Flowering glume sub-



distant, rigid, often hardening, 5–11-nerved, 2-dentate, with a dorsal knee-bent and basally-twisted awn. Grain channelled, pubescent, clothed with the persistent palea.—*Nees, l. c. p. 351.*

Oats; *A. sativa*, *A. orientalis*, and *A. fatua* are more or less naturalized; *A. hirsuta*, Roth, may be indigenous.

#### 60. **TRICHOPTERYX**, Nees.

Spikelets 2-flowered, with a rudimentary glume, panicle. Outer glumes longer than the flowering, unequal, membranous, 3-nerved, the lower smaller. Flowering glume sessile; the lower male, pointless, similar to the outer glume; the upper fertile, rather more rigid, 2-fid, the lobes bristle-tipped, with an interposed straightish, basally-twisted awn.—*Nees, l. c. p. 339.*

*T. Dregeana*, the only species, is a slender grass from Natal.

#### 61. **CHÆTOBROMUS**, Nees.

Spikelets 2- or several-flowered, in close, rigid panicles. Outer glumes longer than the flowering, many-nerved, acute. Flowering glumes faintly 9-nerved, mostly 2-fid, with entire, bristle-pointed segments, with an interposed, basally-twisted awn; lower sessile, unlike the others, or all of different sexes.—*Nees, l. c. p. 340.*

Rigid grasses, resembling *Danthonia*.—5 Cape species.

#### 62. **HIEROCHLOA**, Gm.

Spikelets in a diffuse or close panicle, 3-flowered. Outer glumes keeled, membranous, subequal. Flowering glumes keeled, the terminal hermaphrodite, diandrous, pointless; 2 lower male (1 rarely neuter), triandrous, mostly awned; palea 2-keeled, the terminal flower 1-keeled. Ovary glabrous. Grain free, oblique, slightly compressed, glabrous, covered by the flowering glume and palea.—*Nees, l. c. p. 6.*

Sweet-scented grasses.—3 Cape species.

#### SUBTRIBE 6. FESTUCACEÆ.

#### 63. **FINGERHUTHIA**, Nees.

Spikelets articulated below the lower glumes, with 1–2 fertile flowering glumes and a pedicellate, neuter one, on minute pedicels, which are very closely set in spiral order round the rachis of an oval-oblong, dense spike, many empty glumes (abortive spikelets) occupying the base of the spike.

Glumes 2, equal, subopposite, tapering off to a setaceous point, keeled, 1-nerved, submembranous. Lower flowering glume (or 2 lower) fertile, rigid, the glume longer, keeled, shortly setigerous or mucronate, 5-7-nerved; palea rigid, boat-shaped, bluntly 2-toothed, 2-nerved. Ovary stipitate.—*Nees, l. c. p. 135.*

Tufted grasses of dry ground, with rigid, involute leaves, the simple culm bearing an oblong, brush-like or foxtail-like spike, bristling with the hard, slender points of the glumes.—2 species, of which *F. ciliata* is the commonest.

#### 64. ARUNDO.

Spikelets in a very large effuse panicle, 2-5-flowered, all the flowering glumes except the terminal one hermaphrodite; rachis of the spikelet silkily hairy. Outer glumes acute, nearly equal, very long, in the Cape species as long as the flowering. Flowering glume membranous, 2-fid at the top, and bearing a short awn between the awl-shaped lobes, hairy with silky hairs, especially below; palea shorter than the flowering glume, 2-keeled. Grain free.—*Nees, l. c. p. 347.*

1 Cape species. A fine, handsome grass, found in many parts of the world.—*Donax arundinaceus*, De Beauv.

#### 65. PHRAGMITES, Trin.

Spikelets in a much-branched panicle, 3-6-flowered, the flowering glumes distichous, distant, awnless, the lowest male, the rest fertile. Rachis of the spikelet clothed with long, silky hairs. Outer glumes acute, keeled, shorter than the flowering, membranous, unequal, the upper larger. Flowering glume membranous very long, subulate, often bristle-tipped; palea 2-keeled. Grain free.—*Nees, l. c. p. 356.*

Large grasses of wet places (reeds).—3 Cape species, of which *P. communis* is common to Europe, N. Asia, America, and New Holland.

#### 66. PAPPOPHORUM, Schreb.

Spikelets in close, spike-like panicles, with 1 fertile flowering glume at base, and 1-3 upper sterile ones. Outer glumes 2, membranous, pointless, longer than the flowering. Flowering glume membranous, broad, concave, its apex cut into 9-13 subulate bristles; palea longer, membranous, 2-keeled.—*Kunth, l. c. p. 254.* Enneapogon, *Nees, l. c. p. 233.*

2 Cape species, belonging to the section with 9 bristles, both Eastern.

#### 67. SCHISMUS, Beauv.

Spikelets 5-7-flowered, in close panicles; glumes distichous,

standing apart. Outer glumes 2, subequal, membranous, ovate-oblong, subacute, concave, rather shorter than the flowers; lower 4-7-nerved, upper 3-5-nerved. Flowering glume obovate, 2-fid, pointless or mucronate, 9-nerved, concave, membranous, pellucid at tip, ciliate on back and margin; palea subequal, oblong, acute, 2-nerved. Grain obovate, glabrous.—*Nees, l. c. p. 420.*

Tufted, annual grasses, with narrow leaves, more or less hairy,—4 Cape species.

#### 68. **UROCHLÆNA**, Nees.

Spikelets many-flowered, in an ovate, spike-like raceme. Glumes all herbaceous, tapering into flexuous bristles; the outer 5-nerved. Flowering glume 7-9-nerved, hairy at base; palea enfolded, 2-toothed. Grain glabrous, free.—*Nees, l. c. p. 437.*

*U. pusilla*, Nees, the only species, a small annual of dry ground, with knee-bent culms; the spike bracteate by the dilated sheath of the upper leaf, and falling with it.

#### 69. **LASIOCHLOA**, Kth.

Spikelets in close panicles, 2-4-flowered, the glumes distichous, callous at base, on an articulated rachis. Outer glumes subequal, 5-nerved, convex, longer than the flowers, herbaceous, on the outside (mostly) papillose-pilose. Flowering glume 9-nerved, convex, herbaceo-membranous, acute or mucronate; palea shorter, 2-keeled, sometimes subciliate. Grain glabrous, free.—*Nees, l. c. p. 430.*

Tufted grasses, all South African, with narrow leaves and glomerate panicles.—7 species.

#### 70. **BRIZOPYRUM**, Link.

Spikelets many-flowered, compressed, in simple or compound spikes, subsecund. Outer glumes herbaceous, nerved, subequilateral, the lower many-nerved. Flowering glume convex, rigid at base, obsoletely nerved, more or less clothed with clavate hairs, at the apex herbaceous, 5- or more nerved, acute. Ovary glabrous, stipitate. Grain free.—*Nees, l. c. p. 369.*

Rigid grasses.—4 Cape species.

#### 71. **MELICA**, Linn.

Spikelets 2-5-flowered, 2-3 of the upper glumes neuter, all pointless, paniced or subracemose. Outer glumes 2, rigidly-membranous, about as long as the flowering, often very ample, with a wide margin, the upper one 7-9-nerved. Fertile

flowering glumes 1-2, subcoriaceous, concave, 7-nerved, with or without intermediate nerves; palea 2-keeled.—*Nees, l. c. p. 417.*

Slender grasses, with flat leaves. In the 2 or 3 Cape species the flowering glumes are very hairy on the back.

## 72. CHONDROLÆNA, Nees.

Spikelets in pairs or solitary, along the unjointed rachis of a simple spike, sessile or minutely pedicelled. Outer glumes 2, equal, callous at base, rigid, strongly compressed, many-nerved, unequal-sided, sharply keeled. Flowering glumes 2, membranous, both fertile, sessile, subopposite, boat-shaped; palea membranous, ciliate, linear, narrow, 2-dentate, distantly 2-nerved.—*Nees, l. c. p. 134.*

An elegant grass of the Western district,  $1\frac{1}{2}$ -2 feet high, with narrow leaves and simple, 1-spiked culms. The keel of the outer glumes is very generally, but not always, ciliate, with short, rigid, blunt bristles.

## 73. DACTYLIS, Linn.

Spikelets compressed, 2-7-flowered, in glomerate panicles. Outer glumes suboblique, sharply keeled, mucronate-aristate, unilateral at the apex, unequal, the upper often smaller, thinner, nerveless and concave. Flowering glume 5-nerved, keeled, mucronate-setigerous, ciliate on the keel; palea 2-keeled. Grain glabrous, free.—*Nees, l. c. p. 428.*

Coarse, tufted grasses, with sharply-keeled leaves, and densely tufted, secund spikelets.—1 Cape species.

## 74. KOEHLERIA, Pers.

Spikelets compressed, 2-7-flowered, distichous, pedicelled, in close, spike-like panicles. Outer glumes 2, unequal or subequal, membranous, keeled. Flowering glume membranous, acute, pointless, or shortly awned at or below the apex, the awn straight; palea 2-keeled, 2-fid. Grain glabrous, free.—*Airochloa and Köhleria, Nees, l. c. pp. 424, 427.*

Rather rigid, flat-leaved grasses.—3 Cape species, of which *K. cristata*, a European grass, is common.

## 75. ATROPIS, Griseb.

Spikelets many-flowered, subcylindrical, paniced. Outer glumes rigidly herbaceous, unequal, obtuse. Flowering glume subdistant, papery, obtuse, subdenticulate or mucronulate. Ovary glabrous, acute.—*Nees, l. c. p. 380, sub Sclerochloa.*

Rigid, Poa-like grasses.—2 Cape species.

76. **POA**, Linn.

Spikelets 2-7-flowered, compressed, paniced. Outer glumes keeled, herbaceous, not setigerous, mostly shorter than the flowering, the lower 1-3-nerved, the upper 5-7-nerved. Flowering glumes thinly herbaceous, keeled, persistent, 5-3-nerved, the lateral nerves distant, often pubescent; palea 2-toothed, flattish, with inflexed edges, 2-nerved, the nerves hispid. Ovary glabrous.—*Nees, l. c. p. 377.*

A large genus, dispersed over the world.—3 Cape species, one of which, *P. annua*, is a garden weed.

 77. **ERAGROSTIS**, Beauv.

Spikelets 2-many-flowered, more or less strongly compressed, paniced or rarely subspicate. Outer glumes keeled, distichous, pointless, deciduous, 1-nerved, lower smaller. Flowering glumes keeled, 3-nerved, deciduous; palea persistent, reflexed, the folded margins distinctly nerved, entire, more or less ciliate.—*Nees, l. c. p. 382.*

A large genus, in warm countries, chiefly differing from *Poa* by its flattened spikelets and more regularly distichous glumes.—About 30 Cape species.

 78. **BRIZA**, Linn.

Spikelets many-flowered, ovate or 4-sided, compressed, paniced or racemose. Outer glumes herbaceous, unequal, keeled, ventricose, shorter than the spikelet, 5-7-nerved. Flowering glumes closely imbricate, cordate, keeled, compressed, round-topped, entire, pointless, 7-15-nerved; palea much smaller, entire, flat, ovate, 2-nerved. Grain flattened.—*Nees, l. c. p. 415.*

Of this dispersed genus there are 1 indigenous, perennial, and 2 naturalized, annual Cape species.—*B. maxima* is found everywhere.

 79. **FESTUCA**, Linn.

Spikelets many-flowered, flattened, in panicles. Outer glumes unequal, shorter than the spikelet. Flowering glumes imbricated, keeled toward the apex, mucronate or tapering into a bristle; palea 2-dentate, with inflexed sides. Grain tomentose or glabrous at the apex.—*Nees, l. c. p. 442, and p. 440, sub Vulpia.*

A large, widely-diffused genus, many of them pasture grasses.—7 Cape species.

In the subgenus *Vulpia*, one of the lower glumes is occasionally extremely short, and the flowering glume is often very long-pointed.



80. **BROMUS**, Linn.

Spikelets many-flowered, in loose panicles. Outer glumes membranous, unequal, pointless, shorter than the flowering, the lower 1-7-nerved, the upper 3-11-nerved. Flowering glumes convex and moderately keeled, under the 2-dentate apex setigerous or entire and pointless, with 7 primary nerves; palea infolded, entire or 2-fid. Ovary pubescent at the apex. Grain mostly attached to the palea.—*Nees, l. c. p. 450.*

A large, widely-spread genus.—6 Cape species.

81. **CERATOCHLOA**, Beauv.

Spikelets many-flowered, compressed, in spreading panicles. Outer glumes subequal, shorter than the lower flowering glumes. Flowering glumes imbricate, with a callus at base and palea sharply keeled, setigerous under the apex. "Ovary 3-horned" (*Nees*).—*Nees, l. c. p. 449.*

*C. unioloïdes*, an American grass, is naturalized about Capetown.

82. **CYNOSURUS**, Linn.

Spikelets in spike-like, secund panicles, 2-5-flowered, intermixed with pectinate abortive spikelets or cut-glumes. Outer glumes 2, lanceolate, membranous, 1-nerved, keeled, shortly awned. Flowering glume convex, 5-nerved, mucronate or awned; palea membranous, 2-nerved, folded, 2-toothed. Grain glabrous, adherent.—*Nees, l. c. p. 439.*

Rigid, narrow-leaved grasses.—2 Cape species; one scarcely different from *C. echinatus*, Linn.

83. **EHRHARTA**, Thunb.

Spikelets 1-flowered, compressed, paniced. Outer glumes membranous, pointless, often short; within there are 2 inner hard and dry, strongly keeled, mucronate or subulate-awned empty glumes. Flowering glume and palea membranous or subcoriaceous, keeled; palea shorter and narrower. Stamens 6-3. Grain covered by the flowering glume and palea.—*Nees, l. c. p. 196.*

A large genus, containing 24 Cape species, of very elegant grasses; the 2 inner empty glumes often ribbed and furrowed crosswise.

An interesting link between ordinary *Festuceæ* and *Bambuseæ*.

## SUBTRIBE 7. BAMBUSEÆ.

84. **NASTUS**, Juss.

Spikelets terete-compressed, nearly sessile, paniced, with several empty glumes in the lower part, 1 fertile glume, and a terminal pedicellate rudiment. Outer glumes 2, short,

pointless, rigid. Flowering glumes oblique and palea rather rigid, boat-keeled, pointless, about equal; the palea 2-keeled. Stamens 6. Scales 3. Stigmas 3. Grain glabrous.—*Nees, l.c. p. 463.*

Arborescent grasses, branched at the nodes, with articulated leaves; branches tufted, floriferous at apex.—1 Cape species.

The Cape species has never been found in flower, and its genus is therefore uncertain. Colonel Muuro, in consequence of similarity of foliage, has placed the Cape plant in the genus *Arundinaria*, in which the stamens are 3 in number, and the spikelets contain several perfect flowers.

Dr. Harvey's ms. does not contain a description of the genus *Bambusa*, in consequence, I suppose, of his considering the species found at the Cape to have been undoubtedly introduced.

#### SUBTRIBE 8. HORDEACEÆ.

#### 85. *MONERMA*, Beauv.

Spikelets solitary, half-sunk in hollows of the jointed rachis of a simple spike, 1-flowered. Outer glume 1, cartilaginous, rib-furrowed. Flowering glume and palea membranous, hyaline, pointless; with mere rudiment of an upper glume.—*Nees, l.c. p. 126.*

*M. subulata* is a slender, rigid, narrow-leaved grass; its pale culm ending in a long, slender, pointed, cylindrical spike, barren in its upper nodes; the spikelets are very erect, lying close on the rachis.—Eastern and Western districts.

#### 86. *LOLIUM*, Linn.

Spikelets compressed, many-flowered, distichously-spiked on opposite sides of the rachis. Outer glume usually 1, herbaceous, entire-nerved. Flowering glume herbaceous, convex, 5-nerved, pointless or dorsally setigerous below the apex; palea 2-keeled, with inflexed edges. Grain furrowed, adhering to the palea.—*Nees, l.c. p. 364.*

*L. temulentum* (Darnel), a weed of cultivation, occurs in cornfields.

#### 87. *TRITICUM*, Linn.

Spikelets 3- several-flowered, spiked, distichous. Outer glumes 2, herbaceous, both placed towards one side, subequal, pointless or awned. Flowering glumes convex, 5-nerved, mucronate or awned; palea flat, entire or cloven, 2-keeled, with inflexed edges. Grain free or adherent, furrowed on one side.—*Nees, l.c. p. 365.*

Annual or perennial grasses; wild Wheat.—2 Cape species.

#### 88. *BRACHYPODIUM*, Beauv.

Spikelets many-flowered, semiterete, imbricate, in simple racemes, subdistichous, on short pedicels. Outer glumes

pointless, herbaceous, many-nerved. Flowering glume abruptly setigerous from its entire apex, rarely pointless; palea flat, 2-nerved, with inflexed edges, ciliate on the nerves.—*Nees, l.c. p. 456, and p. 457 sub Trachynia.*

Differing from *Bromus* chiefly in inflorescence.—3 Cape species.

In the subgenus *Trachynia*, the spikelets are generally few in number, with more than 10 flowers in each, and are often more flattened than in ordinary *Brachypodium*.

### 89. HORDEUM, Linn.

Spikelets spiked, set three together on a toothed, jointed rachis, 1-flowered, the middle spikelet sterile, the lateral sterile. Outer glumes 2, subopposite, subulate-aristate, narrow, rigid. Flowering glume subcoriaceous, convex, tapering into a long, straight, terminal awn; palea oblong or lanceolate, 2-nerved, the nerves raised and ciliate. Grain mostly adhering to the flowering glume and palea.—*Nees, l.c. p. 361.*

Wild Barley; *H. Capensis*, peculiar to the Cape, and *H. murinum*, a cosmopolitan species, found about roads and old walls, in seaport towns.

## CLASS III. ACOTYLEDONES.

### ORDER CXLIII. FILICES.\*

Fructification usually minute, consisting of microscopic spores contained in very small, almost microscopic, capsules (sporangia), which are 1-celled and gathered together in heaps (sori) of various shapes on the under side of the leafy portion of the plant (called the frond), or arranged in a separate spike or panicle, or joined together in concrete masses. Sori often enclosed in or hidden under an involucre, which may consist of a membranous scale or cup, or of the reflexed margin of the frond. Capsules mostly stalked and surrounded by an incomplete jointed ring, but sometimes the ring is absent or confined to the apex of the capsule.—In most of the South African species the caudex or main stem is but slightly elevated, but in the tribe *Cyatheæ*, represented by two Cape species, it is woody, and the trunk often reaches a considerable height. In all but *Ophioglosseæ* the vernation is circinate, the young frond being rolled inwards like the head of a crosier.

Suborder 1. **Gleicheniæ.** Vernation circinate. Sori dorsal, of few capsules, which are sessile, open vertically, and have a broad, transverse, complete ring.

The only genus . . . . . 1. **GLEICHENIA.**

\* By J. G. Baker, F.L.S.

Suborder 2. **Cyatheeæ.** Vernation circinate. Trunk woody. Sori dorsal, of many capsules, which are sessile or nearly so, open at the side, and have a slightly excentric vertical ring.

- Sori at first enclosed in a complete cup . . . . . 2. **CYATHEA.**  
Cup very incomplete . . . . . 3. **HEMITELIA.**

Suborder 3. **Polypodieæ.** Vernation circinate. Trunk in none of the Cape species arborescent, the sori usually dorsal, of numerous capsules, which open down the side, and have an incomplete vertical ring, except in *Hymenophylleæ*, which see.

Tribe 1. **DICKSONIÆ.** Frond herbaceous; sori dorsal enclosed in a complete cup.

- The only genus . . . . . 4. **WOODSIA.**

Tribe 2. **HYMENOPHYLLÆ.** Frond beautifully pellucid; sori terminal, enclosed in a complete cup; ring of capsule almost transverse, and dehiscence subvertical.

- Cup shallow, 2-valved, being split half or quite  
down to the base . . . . . 5. **HYMENOPHYLLUM.**  
Cup many times deeper than broad, entire or 2-  
valved at the apex only . . . . . 6. **TRICHOMANES.**

Tribe 3. **DAVALLIÆ.** Involucre attached by the base on the side of the sorus furthest from the edge of the frond, roundish or oblong, not forming a complete cup.

- Involucre (in Cape species) attached by the sides  
and base . . . . . 7. **DAVALLIA.**  
Involucre attached by the base only . . . . . 8. **CYSTOPTERIS.**

Tribe 4. **LINDSAYÆ.** A 2-lipped involucre in a line along the edge of the frond, enclosing the linear sori.

- The only genus . . . . . 9. **LINDSAYA.**

Tribe 5. **PTERIDÆ.** Sori marginal, round or linear. Involucre formed of the more or less modified edge of the frond, and wrapped over the sorus.

- Sori from the under side of the recurved edge of  
the frond, in Cape species globose. Texture of  
frond papery, veining fan-like . . . . . 10. **ADIANTUM.**

Sori erect, with the edge of the frond wrapped  
over them.

- Sori globose, confined to the sinuses of the  
frond, always distinct, veins not uniting . . . 11. **HYPOLEPIS.**

- Sori oblong or linear, confined to the sinuses of  
the frond. Veins joining copiously . . . . . 12. **LONCHITIS.**

- Sori at first globose, but, together with the invo-  
lucres, becoming more or less confluent . . . 13. **CHEILANTHES.**

- Sori and involucres linear, but not absolutely  
continuous. Fronds small and coriaceous . . . 14. **PELLÆA.**

- Sori and involucres quite linear and continuous,  
occupying the edge of the segments only.  
Fronds large and herbaceous, barren and fer-  
tile nearly alike . . . . . 15. **PTERIS.**

- Like *Pteris* in the sori, but the frond small and  
rigid, and like a Fan-palm in miniature . . . 16. **ACTINIOPTERIS.**

Sori and involucres quite linear and continuous,

occupying the whole under surface of the narrowed segments of a modified (fertile) frond . 17. *LOMARIA*.

Tribe 6. *BLECHNEÆ*. Sori and involucres linear, parallel to the edge of the frond, but not close to it.

The only genus . . . . . 18. *BLECHNUM*.

Tribe 7. *ASPENIÆ*. Sori and involucres linear or oblong, running down the veins.

The only genus . . . . . 19. *ASPENIUM*.

Tribe 8. *ASPIDIÆ*. Involucre placed over the sorus, globose or oblong.

Involucre large, elliptical, attached to a linear receptacle . . . . . 20. *DIDYMOCHLÆNA*.

Involucre orbicular, peltately attached . . . . . 21. *ASPIDIUM*.

Involucre reniform, attached by the sinus. Pinnæ divided and not articulated at the base . . . 22. *NEPHRODIUM*.

Involucre reniform. Pinnæ simple, articulated at the base . . . . . 23. *NEPHROLEPIS*.

Involucre reniform. Frond quite simple . . . . . 24. *OLEANDRA*.

Tribe 9. *EUPOLYPODIÆ*. Sori without an involucre, globose or rarely suboblong.

The only genus . . . . . 25. *POLYPODIUM*.

Tribe 10. *GRAMMITIDÆ*. Sori linear or linear-oblong, without an involucre.

Frond simple, like leaves of grass.

Fronds with a midrib only . . . . . 26. *MONOGRAMME*.

Fronds with copious veins in addition to the midrib . . . . . 27. *VITTARIA*.

Fronds compound, orbicular or ovate.

Sori marginal . . . . . 28. *NOTOCHLÆNA*.

Sori running down the veins . . . . . 29. *GYMNOGRAMME*.

Tribe 11. *ACROSTICHEÆ*. Sori spread over under surface of the frond.

The only genus . . . . . 30. *ACROSTICHUM*.

Suborder 4. *Osmundææ*. Vernation circinate. Capsules with an incomplete horizontal ring, opening at the apex.

Fructification in special thyrsoïd clusters (modified portions of the frond) . . . . . 31. *OSMUNDA*.

Fructification on the back of the leafy part of the frond . . . . . 32. *TODEA*.

Suborder 5. *Schizææ*. Vernation circinate. Capsules opening down the side, crowned with a small, complete ring.

Capsules in special distichous spikes . . . . . 33. *SCHIZÆA*.

Capsules in special dense thyrsoïd clusters . . . 34. *ANEMIA*.

Capsules on the back of the leafy part of the frond 35. *MOHRIA*.

Suborder 6. *Marattieæ*. Vernation circinate. Capsules concrete in boat-shaped masses in the only Cape genus . . . 36. *MARATTIA*.

Suborder 7. *Ophioglosseæ*. Vernation not circinate. Capsules deeply 2-valved, without a ring, forming a dense, 2-ranked spike in the only Cape genus . . . . . 37. *OPHIOGLOSSUM*.



SUBORDER 1. **Gleicheniæ.**

Vernation circinate. Sori dorsal, of a few, generally 4-8, large, sessile capsules, without an involucre, having a broad, transverse, complete ring and a slit across the top.

1. **GLEICHENIA**, Smith.

The only genus, represented in Cape colony by 2 species, 1 belonging to the subgenus *Eugleichenia*, which has very small, rounded or oblong lobes, and sori terminal on the veins, and the other to *Mecosorus* (*Mertensia*, Willd. not Roth), with linear segments arranged like the teeth of a comb, and sori on the back or at the forking of the veins. Texture always more or less coriaceous or chartaceous.—*Pappe and Rawson*, p. 10; *Hook. and Baker, Syn. Fil.* p. 11.

SUBORDER 2. **Cyatheeæ.**

Vernation circinate. Trunk woody, sometimes attaining a height of 80 feet. Sori dorsal, of numerous capsules, which are sessile or nearly so, have a broad, slightly excentric, nearly or quite complete ring and slit down the side.

2. **CYATHEA**, Smith.

Sori at first enclosed in a complete cup, which opens at the apex, and is either truncate at the mouth or breaks away in various modes.—*Pappe and Rawson*, p. 11; *Hook. and Baker, Syn. Fil.* p. 16.

Vernation always simple, the fronds usually very large, and 3- or 4-pinnatifid.—1 South African species, confined to Caffraria and Natal.

3. **HEMITELIA**, R. Br.

Involucre a depressed half-cup, generally lobed.—*Pappe and Rawson*, p. 11 (*Alsophila*); *Hook. and Baker, Syn. Fil.* p. 27.

The single Cape species is like *Alsophila* and *Cyathea* in veining and general habit, and has a curious geographical distribution, being found also in Java and Brazil. It produces curiously-modified pinnæ with capillary segments from the base of the stipe, which have been described as a species of *Trichomanes*. Several of the South American have much larger divisions, and groups of veins connected at the base.

SUBORDER 3. **Polypodiæ.**

Vernation circinate, the trunk woody in a few species of *Dicksonia*, none of which occur in the Cape colonies; the capsules stalked and furnished with an incomplete vertical ring, bursting on the side, placed on the back of the leafy part of the frond, except in the tribe *Hymenophyllæ*.

## TRIBE 1. DICKSONIÆ.

Frond herbaceous. Sori on the back or at the edge of the frond. Involucre cup-shaped, often more or less completely 2-valved.

4. **WOODSIA**, R. Br.

Involucre globose, membranous, cup-shaped, placed on the back of the frond and dorsal also on the veins, the edge fringed or irregularly-lobed.—*Hook. and Baker, Syn. Fil. p. 46.*

Fronds small, herbaceous, ovate-lanceolate, 2- or 3-pinnatifid, the veins always free.—A genus principally inhabiting the high mountains of the northern hemisphere, a single species of which has been recently discovered in the Natal Mountains.

## TRIBE 2. HYMENOPHYLLÆ.

Texture of the frond beautifully pellucid and membranous; the cells larger and laxer than in other ferns; the sori placed on the edge of the leafy portion, enclosed in tubular or cup-shaped involucre. Capsules seated on a filiform or clavate receptacle, which is often protruded beyond the mouth of the cup.

5. **HYMENOPHYLLUM**, Smith.

Involucre a cup, deeply divided into 2 valves.—*Pappe and Rawson, p. 44; Hook. and Baker, Syn. Fil. p. 56.*

Fronds small or middle-sized, generally decompound with narrow divisions, and only a single vein in the centre. Caudex a wide-creeping, thread-like rhizome.—3 South African species are known, 1 of which represents § *Leptocionium*, and has toothed segments and involucre.

6. **TRICHOMANES**, Linn.

Involucre a deep tube-like cup, not at all slit or with the mouth only slightly 2-valved.—*Pappe and Rawson, p. 45; Hook. and Baker, Syn. Fil. p. 71.*

General habit as in *Hymenophyllum*, but frond usually less divided, and the receptacle more constantly and conspicuously protruded.—5 South African species are known, 3 of which grow nearly everywhere in damp tropical regions.

## TRIBE 3. DAVALLIÆ.

Involucre roundish or oblong, marginal or dorsal on the veins and segments, always attached on the inner side of the sorus by the base, and usually, but not always, by the sides also, leaving the apex free.

# 7. DAVALLIA, Smith.

Sori always terminal on the veins, but often more or less intramarginal ; in the South African species attached by the sides as well as the base, leaving only the apex free.—*Hook. and Baker, Syn. Fil. p. 88. Microlepia and Davallia, Pappe and Rawson, p. 24.*

The 4 South African species represent 3 subgenera ; 2, *Eudavallia*, with coriaceous fronds and stems jointed at the base as in *Polypodium* ; 1, *Microlepia*, with ample decompound herbaceous fronds, membranous involucre and stipes continuous with the caudex ; and 1, *Loxoscaphe*, which has the sori in lateral pouches, connects this tribe with *Asplenica* through *Darea*.

# 8. CYSTOPTERIS, Bernh.

Sori dorsal both as regards the veins and segments ; the involucre an ovate, membranous scale, attached only by the base.—*Pappe and Rawson, p. 16 ; Hook. and Baker, p. 103.*

A small genus, principally found in the north temperate zone ; the single South African species is one of the most cosmopolitan of plants.

## TRIBE 4. LINDSAYÆ.

Sori linear, placed along the very edge of the segments of the frond, enclosed in a similarly-shaped involucre, composed of 2 subequal valves.

# 9. LINDSAYA, Dryand.

The only genus.—*Hook. and Baker, Syn. Fil. p. 104. Schizolema, Pappe and Rawson, p. 25.*

One species, which is widely diffused through the tropics of the Old World, extends into Natal.—The typical *Lindsayæ* have dimidiate papyraceous ultimate divisions and free venation, but in this the divisions are equal-sided, and the veins anastomose copiously.

## TRIBE 5. PTERIDÆ.

Sori quite marginal as regards the segments of the frond, terminal on the veins, round or oblong or linear. Involucres similar to the sori in shape and rolled over them or bearing the sori on their lower surfaces.

# 10. ADIANTUM, Linn.

Involucres bearing the sori from their under surface, round or oblong or linear.—*Pappe and Rawson, p. 32 ; Hook. and Baker, Syn. Fil. p. 113.*

Colour and texture of the frond usually bright green and papyraceous, the veining more or less clearly fan-like, and the divisions often dimidiate.—In

the 2 Cape species, both of which occur everywhere in humid, warm regions, the divisions are roundish and equal-sided, and the sori and involucres globose.

### 11. **HYPOLEPIS**, Bernh. non Pers.

Sori globose, confined to the sinuses of the ultimate divisions of the decompound frond, with involucres of the same shape.—*Pappe and Rawson*, p. 37, and *Cheilanthes*, p. 34, in part; *Hook. and Baker*, *Syn. Fil.* p. 128.

Fronds ample, decompound, the ultimate divisions small, the veining always free.—2 Cape species.

### 12. **LONCHITIS**, Linn.

Sori oblong or linear, confined to the sinuses of the divisions of the frond. Veins joining copiously.—*Pappe and Rawson*, p. 38; *Hook. and Baker*, *Syn. Fil.* p. 128.

A single Cape species (with 2 varieties). Had probably better be united with *Pteris*.

### 13. **CHEILANTHES**, Swartz.

Sori commencing as distinct globose dots at the ends of the veins, but often becoming more or less confluent. Involucres globose, quite distinct or often more or less confluent.—*Pappe and Rawson*, p. 33 (in part); *Hook. and Baker*, *Syn. Fil.* p. 131.

Fronds small and coriaceous, the veining always free.—Of the 5 Cape species 2 belong to sect. *Adiantopsis*, in which the sori and involucres remain permanently distinct, and 3 to sect. *Eucheilanthes*, in which they show a more or less marked tendency to unite as the plant grows older.

### 14. **PELLÆA**, Link.

Sori and involucres linear, but not so clearly continuous as in *Pteris*. Frond of small size, and usually coriaceous in texture.—*Hook. and Baker*, *Syn. Fil.* p. 141. *Allosorus* (in greater part), *Pappe and Rawson*, p. 30, and *Cryptogamma*, l.c. p. 32.

Intermediate between *Cheilanthes* and *Pteris* in fructification, with the general habit of the former.—12 Cape species, all but 1 with free venation; 2 others belonging to sect. *Platyloma*, in which the involucre is so narrow that it is soon hidden as the fruit develops.

### 15. **PTERIS**, Linn.

Sori and involucre both linear and quite continuous. Fronds ample and herbaceous.—*Hook. and Baker*, *Syn. Fil.* p. 153. *Pteris*, *Campteria*, and *Allosorus* (in part), *Pappe and Rawson*.

5 Cape species, belonging to sect. *Eupteris*, which has free veins, and a suberect caudex; 1 (*aquilina*), to sect. *Pesia*, which has a wide-creeping

rhizome, and a second inner membranous involucre often developed; and 1 (*P. incisa*), to sect. *Litobrochia*, which has copiously anastomosing veins.

# 16. ACTINIOPTERIS, Link.

Sori and involucre linear and continuous. Frond rigid, like the leaf of a fan-palm in miniature.—*Hook. and Baker, Syn. Fil. p. 246.* *Blechnum, Pappe and Rawson, p. 16 (in part).*

A single species, common in tropical Africa, extending southward to Magalisberg.

# 17. LOMARIA, Willd.

Involucres linear. Sori occupying the whole under surface of the narrow linear pinnæ of a modified frond.—*Pappe and Rawson, p. 27; Hook. and Baker, Sp. Fil. p. 174.*

4 South African species.—Barren and fertile fronds, in all of them simply pinnate, quite distinct from one another. One of the species (*L. punctulata*) passes gradually into a very curious *Scolopendrium*-like variety (*Scolopendrium Krebsii*, Kunze).

## TRIBE 6. BLECHNEÆ.

Sori and involucres linear, more or less intramarginal, parallel with the midrib and edge of the pinnæ, and consequently crossing the veins.

# 18. BLECHNUM, Linn.

The only genus, represented by a single species. In general habit the genus quite corresponds with *Lomaria*, the difference being, that the involucre arises from a line more or less clearly within the edge.

1 South African pinnate species; also found in Bourbon and Madagascar.

## TRIBE 7. ASPLENIEÆ.

Sori and involucres running down the veins, linear or oblong, sometimes 2 placed back to back, sometimes a little curved, oblique with regard to the midrib.

# 19. ASPLENIUM, Linn.

The only genus.—*Hook. and Baker, Syn. Fil. p. 190.* *Asplenium and Athyrium, Pappe and Rawson, pp. 16 and 17.*

A very large genus, represented by 28 species in South Africa, 21 of which belong to sect. *Euasplenium*, which has free veins and single linear sori quite upon the back of the segments; 5 to sect. *Darea*, in which the sori are linear, and the divisions so narrow that the sori are nearly or quite marginal, and the veins usually restricted to a single central costa; and 2 to sect. *Athyrium*, which approximates to *Nephrodium* by its much shorter sori, often considerably curved; sect. *Diplazium*, with free veins and gemi-



nate sori, is not represented in South Africa, nor are any of the groups with anastomosing venation. Some of the species vary remarkably in the cutting of the frond.

#### TRIBE 8. ASPIDIEÆ.

Sori globose or oblong, placed on the back of the segments with an involucre of the same shape covering them, of which the edges are free nearly or quite all round.

#### 20. DIDYMOCHLÆNA, Desv.

Sori elliptical, terminal on the veinlets; the involucre emarginate at the base, attached to the linear receptacle, free all round the edge.—*Pappe and Rawson*, p. 15; *Hook. and Baker*, *Syn. Fil.* p. 248.

A single cosmopolitan tropical species, which extends into Natal.

#### 21. ASPIDIUM, Swartz (in part), R. Br.

Sori subglobose. Involucre orbicular, fixed by the centre.—*Hook. and Baker*, *Syn. Fil.* p. 248. *Polystichum* and *Cyrtomium*, *Pappe and Rawson*, pp. 14, 15.

5 Cape species, 4 belonging to sect. *Polystichum*, with ample 2- or 3-pinnate, coriaceous fronds and free venation; and 1 to sect. *Cyrtomium*, with simply pinnate fronds and veins uniting slightly towards the edge.

#### 22. NEPHRODIUM, Rich.

Sori subglobose; the involucre cordate-reniform, attached by the sinus.—*Hook. and Baker*, *Syn. Fil.* p. 259. *Lastrea* and *Nephrodium*, *Pappe and Rawson*, pp. 12 and 14.

Texture of the frond herbaceous; the pinnae pinnatifid or still more divided, not jointed at the base.—5 Cape species, belonging to sect. *Lastrea*, which has the veins free; and 2 to *Eunephrodium*, in which the lower veinlets of the contiguous regularly-pinnated groups join at their points.

#### 23. NEPHROLEPIS, Schott.

Sori globose, on the apex of an upper branch of a vein, generally near the edge of the frond. Involucre reniform or suborbicular. Pinnae simple, articulated at the base, marked on the upper surface with white, chalk-like dots.—*Hook. and Baker*, *Syn. Fil.* p. 300.

A single common cosmopolitan tropical species reaches Natal.

#### 24. OLEANDRA, Cavan.

Sori globose, inserted in a row near the base or below the centre of the compact, free veinlets. Fronds quite simple, the rhizomes wide-trailing and stems jointed.—*Pappe and Rawson*, p. 13; *Hook. and Baker*, *Syn. Fil.* p. 302.

1 tropical African species reaches Natal.

## TRIBE 9. EUPOLYPODIEÆ.

Sori without an involucre, globose or rarely suboblong, placed on the back of the segments, dorsal or terminal on the veins.

## 25. POLYPODIUM, Linn.

Characters of the tribe.—*Hook. and Baker, Syn. Fil. p. 304.* Polypodium, Goniopteris, Marginaria, Pleopeltis, Phymatodes, and Niphobolus, *Pappe and Rawson, p. 39-41.*

A very large genus, and variable as to habit, and veining. There are two principal sections, viz. *Phegopteris*, with fronds like those of the *Aspidiæ*, stipes continuous with the caudex, and sori always medial on the veins;—and *Eupolypodium*, in which the stipes is jointed at the base, and the sori usually terminal on the veins. The first section is represented at the Cape by 2 species of subsection *Goniopteris*, which has the veining of *Eunephrodium*. Of the subsections of *Eupolypodium*, there are—

Subsection *Eupolypodium* proper. Veins all free.—3 species.

Subsection *Goniophlebium*. Veins forming ample uniform areolæ, with the sori terminal on single free veinlets in the centre.—1 species.

Subsection *Niphobolus*, with matted fronds, and a more complicated venation.—1 species.

Subsection *Phymatodes*. Fronds not matted, veins uniting copiously and irregularly.—5 species.

## TRIBE 10. GRAMMITIDÆ.

Sori linear or linear-oblong, without an involucre, dorsal or marginal.

## 26. MONOGRAMME, Schk.

Fronds like small leaves of grass, with only a central midrib. Sori in a line close to the midrib.—*Hook. and Baker, Syn. Fil. p. 374.*

The simplest in structure of all the plants of the Order.—1 Cape species.

## 27. VITTARIA, Smith.

Fronds grass-like, with copious, lateral, free veins. Sori linear, continuous, marginal.—*Pappe and Rawson, pp. 38, 53; Hook. and Baker, Syn. Fil. p. 395.*

A single Cape species.

## 28. NOTOCHLÆNA, R. Br.

Fronds ovate, compound. Sori marginal, at first oblong or subglobose, soon confluent into a continuous marginal line.—*Pappe and Rawson, p. 42; Hook. and Baker, Syn. Fil. p. 370.*

4 Cape species, 3 of which are very rare, and nearly or quite endemic, the other probably identical with a plant common round the shores of the Mediterranean.

## 29. GYMNOGRAMMA, Desv.

Sori arising from veins over the under surface of the compound frond, simple or forked.—*Hook. and Baker, Syn. Fil. p. 376.* Grammitis, Ceterach, and Gymnogramma, *Pappe and Rawson, p. 23 and 41–42.*

5 Cape species, which range under the sections as under :—

Section *Leptogramma*. Habit and mode of growth of *Aspidium*. Veins free.—1 species.

Section *Eugymnogramma*. Habit and mode of growth of *Cheilanthes*. Veins free. Fronds not waxy on the under surface.—1 species.

Section *Ceropteris*. Like the last, but the fronds covered all over below with white or yellow powder.—2 species.

Section *Selliguea*. Veins anastomosing copiously. Habit and mode of growth of *Eupolypodium*.—1 species.

## TRIBE 11. ACROSTICHEÆ.

Sori forming a stratum over the under surface of the frond of some or all the pinnæ, not confined to the veins only.

## 30. ACROSTICHUM, Linn.

Patches of sori covering the whole of the under surface of the frond, or in one species of the upper pinnæ only.—*Hook. and Baker, Syn. Fil. p. 399.* Stenochlæna, Olfersia, and Acrostichum, *Pappe and Rawson, p. 43–44.*

6 Cape species, falling under 3 sections, viz. :—

Section *Elaphoglossum*. Fronds quite simple. Veins free.—4 species.

Section *Stenochlæna*. Barren fronds, simply pinnate, fertile 2-pinnate, with very narrow divisions like those of *Lomaria*. Veins close, free, parallel.—1 species.

Section *Chrysodium*. Fronds simply pinnate. Veins anastomosing copiously ; lower pinnæ barren.—1 species.

## SUBORDER 4. Osmundææ.

Vernation circinate. Capsules 2-valved, opening across the apex, furnished with a very incomplete horizontal ring.

## 31. OSMUNDA, Linn.

Fruit bearing part quite distinct from the leafy part of the frond, forming a panicle made up of copious thyrsoid clusters.—*Pappe and Rawson, p. 46.* *Hook. and Baker, Syn. Fil. p. 426.*

1 Cape species. The well-known, widely-diffused *O. regalis*.

## 32. TODEA, Willd.

Sori on the back of the leafy part of the frond.—*Pappe and Rawson, p. 47 ; Hook. and Baker, Syn. Fil. p. 427.*

Combines the capsules of *Osmundea* with the habit of *Polypodia*.—1 species, also occurring in Australia and New Zealand.

### SUBORDER 5. **Schizææ.**

Vernation circinate. Capsules 2-valved, opening down the side, crowned by a complete operculiform ring.

#### 33. **SCHIZÆA**, Smith.

Capsules sessile, in 2-4 rows, covering one side of close distichous spikes, which form separate fertile segments at the apex of the fronds.—*Pappe and Rawson*, p. 45; *Hook. and Baker, Syn. Fil.* p. 428.

2 Cape species, both with unbranched, rush-like fronds, and pinnate fertile segments.

#### 34. **ANEMIA**, Swartz.

Capsules minute, very abundant, forming a copiously-branched panicle, with thyrsoid branches, which is quite distinct from the leafy part of the frond.—*Pappe and Rawson*, p. 46; *Hook. and Baker, Syn. Fil.* p. 431.

A curious and distinctly-marked genus, almost confined to tropical America.—1 Cape species.

#### 35. **MOHRIA**, Swartz.

Capsules sessile, placed on the back of the leafy part of the frond near the margin.—*Pappe and Rawson*, p. 46; *Hook. and Baker, Syn. Fil.* p. 436.

Combines the capsules of the suborder with the general habit of a *Cheilanthes*.—The only species, is confined to the Cape and Mascaren isles.

### SUBORDER 6. **Marattieæ.**

Vernation circinate. Capsules opening by a slit down one side or a pore at the apex, entirely without a ring, usually joined together in concrete masses (*synangia*). Caudex a succulent, tuberous mass, upon which the stipites are articulated, furnished at the base with large, flap-like, leathery auricles.

#### 36. **MARATTIA**, Smith.

Capsules in the Cape species sessile, 10-12 together, concrete in boat-shaped masses, which consist of 2 opposite rows of capsules, opening by slits down their inner faces.—*Pappe and Rawson*, p. 47; *Hook. and Baker, Syn. Fil.* p. 440.

Only 1 Cape species, a variety of a plant spread through the tropics of the Old World.

SUBORDER 7. **Ophioglosseæ.**

Vernation erect. Capsules deeply 2-valved, without any ring, opening down the side nearly to the base.

37. **OPHIOGLOSSUM**, Linn.

Capsules sessile, arranged in 2 rows, so as to form a dense spike.—*Pappe and Rawson*, p. 47; *Hook. and Baker, Syn. Fil.* p. 444.

3 Cape species, 1 a form of the cosmopolitan *O. vulgatum*, and 1, which is confined to the Cape and very rare, forming the sect. *Rhizoglossum*, Presl, characterized by having the barren and fertile fronds distinct.

ORDER CXLIV. **LYCOPODIACEÆ.**

Capsules sessile in the axils of the leaves, deeply 2- or 3-valved, 1-3-celled, without a ring, uniform or of 2 kinds; when of 2 kinds, 1 is larger than the other, and contains 3 or 4 large spores (macrospores); the smaller capsules, or all of them if of one kind only, containing a large mass of minute, dust-like spores (microspores).—Leaves uniform and imbricated all round the stem, or of 2 kinds, arranged in fours, the smaller pair adpressed to the stem, and the larger spreading from it in a single plane. Capsules dispersed amongst the leaves down the stem or confined to a few of the upper leaves, which are then often different from the others and form a sort of cone.

1. **LYCOPodium**, Linn.

Capsules and spores all of one kind, the former 2-valved and 1-celled; the leaves usually equal and spreading uniformly.—*Pappe and Rawson (in part)*, p. 48.

Species 6; the leaves in all spreading uniformly.

2. **SELAGINELLA**, Spring.

Capsules and spores of 2 kinds, the former 2-valved and 1-celled, aggregated in terminal heads. Leaves usually of two forms and sizes, the larger pairs spreading distichously.—*Lycopodium*, *Pappe and Rawson (in part)*.

4 Cape species, in 2 of which the leaves spread uniformly.

3. **PSILOTUM**, Swartz.

Capsules 3-celled, 3-valved. Leaves minute, rigid and very much scattered.—*Pappe and Rawson*, p. 50.

A single, widely-diffused, tropical species (*P. triquetrum*), reaches Natal.



—Stems rigid, erect, slender, angled, irregularly-branched. Leaves few and scale-like. Capsules in the angles of the scales.

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### ORDER CXLV. MARSILEACEÆ.

Capsules of 2 kinds, 1 containing a single large spore, and the other numerous minute ones. In some genera both kinds of capsule enclosed in a common, many-celled receptacle.

Marsh or water plants of very various habit.

#### 1. MARSILEA, Linn.

Spores of both kinds contained in the same receptacle, which is placed at or near the base of the long petioles of the 4-foliolate fronds.

1 Cape species, with the fronds of a 4-leaved shamrock.

#### 2. AZOLLA, Lam.

Receptacles very minute, of 2 kinds, hanging from the lower side of the branches of a pinnate frond with minute imbricated leaves.

1 Cape species; a minute, pinnately-branched, moss-like, floating water-plant.

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### ORDER CXLVI. EQUISETACEÆ.

Spores surrounded by elaters, placed on the under side of stalked, peltate scales, which form cones at the apex of the stems. Stems erect, cylindrical, fluted, jointed, hollow between the joints, which terminate in toothed sheaths.

Only 1 genus, *Equisetum*, represented at the Cape by a single species, in which there are no whorls of small branchlets, as is often the case, from the nodes of the main stem, which is erect, copiously and regularly striated, and abounds in silica.

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### ADDENDUM.

AMERINA TRIPHYLLA, *A. DC. in DC. Prod.* v. 9, p. 513 (*Ehretia triphylla*, *Hochst. Herb.*), a plant gathered in Natal by Krauss, and doubtfully referred by A. De Candolle to the American genus *Amerina*, is wholly unknown to me.



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*The Synonyms are in Italics.*

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